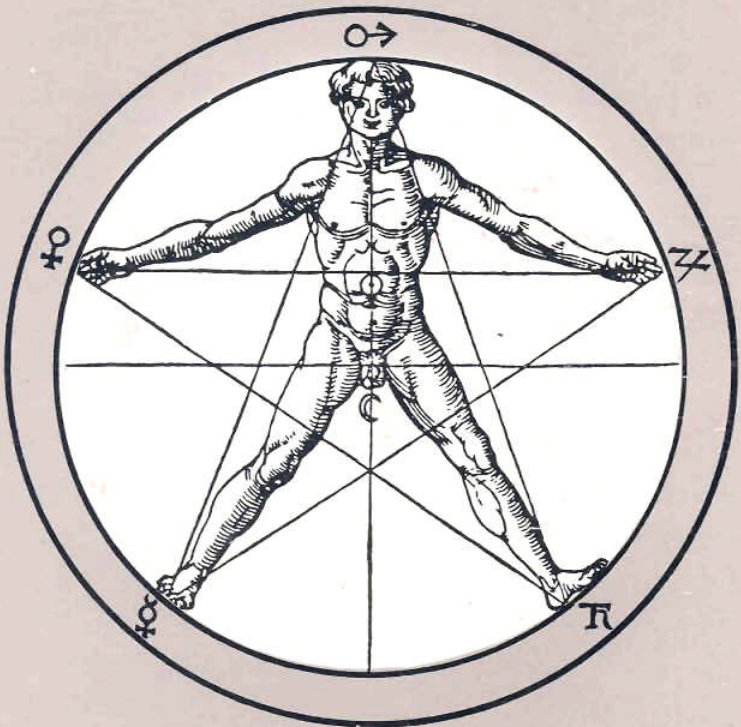
the Skeptical Inquirer

MOON MYTHS

Cool Light on Lunar-Effect Claims



Soviet Psi Studies
Psychopathology of Fringe Medicine
Computers and Psi
London CSICOP Conference

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the Skeptical Inquirer

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News and Comment

CSICOP's International Conference in London: Investigation and Belief, Past Lives and Prizes

"A QUARTER OF A MILLION pounds up for grabs!" This was the offer that accompanied CSICOP's International Conference, June 28-29, 1985, held in London, and we of the British branch were delighted to welcome our American colleagues.

At the press conference in the Scientific Societies' lecture theater, hosted by the British branch, preceding the conference at University College London, a giant check for £250,000 was on display. The money is the (probably incomplete) total of various prizes on offer for a demonstration of the paranormal under scientifically controlled conditions. The type of demonstration varies from prize to prize, and the amounts range from $1,000 to American magician John Scarne's offer of $100,000. (These amounts are offered by individuals, not CSICOP itself.) Claimants need put up nothing but their psychic abilities and agreement to put their claims to controlled tests.

The conference took as its theme "Investigation and Belief." CSICOP's chairman, Paul Kurtz, opened the proceedings. Moderators for the three main sessions were James E. Alcock (professor of psychology at York University, Toronto), Chris Scott (statistician and psychologist), and *SI*'s editor, Kendrick Frazier.

Philip J. Klass gave a roundup of UFOs past, present, and future. He said he had proposed to J. Allen Hynek that one, two, or three really outstanding UFO cases be presented for assessment by the National Academy of Sciences. Six months had gone by without a response from Hynek. Klass made three predictions: (1) Hynek will never accept the challenge. (2) No one at the conference will live to see a UFO. (3) Belief in UFOs will outlive every one of us.

Incidentally, if you care to make your own prediction of a UFO landing, Klass has a bargain for you. If a UFO ship or artifact lands within five years of your prediction, he will pay you $10,000. As a token of good faith, you pay him only $100 a year until the landing, with a cutoff point at five years. The National Academy of Sciences is to be referee.

Melvin Harris has researched many psychic claims. He pointed out that 40 percent of Americans believe in reincarnation, and he offers a simple major cause—the domestic tape-recorder. Without it, we would be spared these

David Marks

Berglas with £250,000 check: Challenging psychic claimants.

excursions into past lives because the endless recording of details by hand would be too cumbersome.

Harris's main theme concerned his research into the Bloxham tapes. Arnall Bloxham was a hypnotherapist. (He also claimed to have been Sir Francis Drake.) He used his patients for a bit of experimentation into the remembrance of past lives. A BBC-TV producer, Jeffrey Iverson, made a program from some of the resulting tapes and followed up with a book.

Some of the most impressive reincarnation accounts came from a Welsh housewife, Jane Evans, who had originally gone to Bloxham for treatment of her arthritis. But her stories, for example, of York in long-gone times, crumbled in the face of conflicting evidence—a massacre set in the wrong century and a Jewish ghetto that never was. Harris made a point of combing through historical novels that dealt with the times of Jane Evans's accounts. One of her reincarnations featured the same historical characters Louis de Wohl used for his 1947 novel, *The Living Wood*. Fair enough. But de Wohl's *fictional* characters also appeared in her memories.

Books are not the only source of information for someone who claims memories of past lives. Where did Bridey Murphy come across the details of Irish life—the Irish cottage, the jigs, the playing of the uillean pipes, Blarney Castle, and the custom of kissing the Blarney stone while held upside-down? The Chicago Exposition of 1893 featured just such Irish cottages, uillean pipes, and jigs. There was a full-sized replica of the tower of Blarney Castle, and (on its summit) a demonstration of the curious method of kissing the Blarney stone. The exposition ran for six months. For 25 cents anyone could see it—and about 3.5 million people did. What's more, 11 years later, the St.

David Marks

Moderator Scott: Parapsychology bears outward trappings of science.

CSICOP's London Conference: Musings, Thoughts, and Themes

CSICOP's LONDON conference, which Lewis Jones reports on in this issue, went well, and everyone seemed to feel this first-ever European conference worth the considerable effort that went into it. This conference was arranged on much shorter notice than CSICOP's two previous international confabs, and with the headquarter's staff at transatlantic distance, local U.K. organizers, led by Michael Hutchinson, Jeremy Cherfas, David Marks, David Berglas, and Ian Ridpath, had to do considerable scurrying to bring things about.

To my mind, what distinguished this conference and made it memorable, apart from the stimulating London setting, was the participation of the audience. Sharing was the key—sharing of information, ideas, suggestions, and problems. Every session was followed by a full interchange, and it wasn't just a narrow response to the papers. There seemed to be a desire on the part of everyone to seek out the best ways to cope with the issues posed by public belief in and fascination with the paranormal. Educational issues, particularly those in science and public education, were constantly broached. This was a community of inquirers and educators sharing common concerns and seeking to learn about their colleagues' experiences—successes and failures—in helping create a better-informed, more critically perceptive public, in the classroom and out.

Another theme was the need to go beyond matters of factual "debunking," essential as they are where the misinformation is widespread, to inquiries into the whys and hows of belief. Our minds are wondrous things, capable of phenomenal feats of insight, creativity, and achievement. They are also capable of deceiving us, often in subconscious conspiracy with our own needs, beliefs, and wishes. This is fertile and fascinating ground for inquiry, and a chance for true *understanding*. Here is where we can go beyond examining in isolation from one another astrology, UFOs, psychics, ESP, afterlife, feelings of transcendent experience, monsters, and all the rest of the "paranormal" litany.

The subtle workings of the human mind and the often underrated power of belief combine to form a unifying framework for exploring and understanding the "paranormal" and fringe-science. This approach has the added advantage of helping those who have had seemingly unexplainable experiences understand them. The insights they gain can help demystify in an honest, positive way these powerful influences on personal belief and public misinformation. This was a theme struck again and again by speakers and respondents at the London meeting, and I think we'll see it reflected more and more in the pages of the SKEPTICAL INQUIRER.

—*Kendrick Frazier*, Editor

David Marks

Harris: "Reincarnated" woman recounts fictional characters.

Louis Exhibition repeated the whole venture.

Science writer and broadcaster Jeremy Cherfas talked about "The Age of Aquarius: Waiting for the Dawn." He recounted the dire discrepancies between sidereal and tropical astrology; the two astrological methods are contradictory. It turns out that astrological estimates of the possible beginnings of the Age of Aquarius range from the year 1781 to the year 2740, which hardly lends confidence to claims of astrological precision.

Cherfas said he was sometimes asked, "Why do you bother with this codswallop?" His answer: "If I just said, 'This is bunk,' people would say, 'Oh-oh, another scientist with a closed mind.' So first I study the evidence, and *then* I say it's bunk."

Physicist Al Seckel, chairman and inspirer of the Southern California Skeptics, ended the first day's session by giving a lively lowdown on firewalking. He explained the secret by a simple but effective analogy: Imagine a cake baking in an oven at 375° F. The metal cake-tin, the cake itself, and the air in the oven are all 375° F. But touch the cake-tin, and you'll be burned; touch the cake, and your hand will be safe even though the cake feels hot; hold your hand in the air above the cake, and you'll scarcely feel discomfort. The embers themselves have low heat content and poor thermal conductivity, and so if you walk fast enough you won't get burned. (See *SI*, Fall 1985.) Seckel recalls tossing firewalk embers from hand to hand without harm.

It was also Seckel who provided a wry response to those who are quick to postulate "unknown forces" to explain psychic phenomena: "Before you bring in unknown forces, you naturally have to eliminate known forces. So of course you know what the four known forces are, don't you?" He often gets silence in response.

After the dinner at the end of the

K. Frazier

Friday P.M. panelists Harris, Klass, Cherfas, Seckel, and Alcock.

K. Frazier

Marks: Why do people believe?

first conference day, Paul Kurtz presented CSICOP's "In Praise of Reason" award to British branch member and philosopher Antony Flew. In accepting the plaque, Professor Flew suggested we treat reports of psi in the same way we treat reports of miracles. And, anyway, we wouldn't buy lottery tickets or bet on races if we *really* believed there were people with precognition.

Ray Hyman led off the second day of the conference with "Parapsychology: A Flawed Science." He had looked for a research program that parapsychologists themselves thought especially promising. He chose the ganzfeld paradigm, in which relaxed subjects attempt ESP while some of their perceptions are isolated (e.g., white noise is fed into their ears and half of a ping-pong ball is placed over each eye).

As described more fully in the Fall 1985 *SI*, the data-base was 42 ganzfeld studies conducted from 1974 through 1981. It was alleged that 55 percent of these had given successful results. Hyman claimed to find a bias in treating studies with small samples—reporting the study if the result was significant and dismissing it as having inadequate power if the result was not significant. There was also a tendency to treat a pilot or exploratory series of trials as a full-blown study if it turned out to be significant.

A third of the studies were flawed by nonsystematic shuffling or hand-shuffling. Another third didn't mention the method of shuffling at all. In fact, only 26 percent of the studies used appropriate randomization. Hyman's assessment lowers the success rate to at most 30 percent, and probably less. His conclusion: The ganzfeld studies have too many problems to be seriously put before outsiders as evidence for psi.

C. E. M. Hansel, emeritus professor of psychology at University College Swansea, talked on "Fallacy, Fact, and Fraud in Parapsychology." He laid three facts and two fallacies on the line. The facts: (1) In some experiments with cards, there are results that are not due to chance. (2) Something is responsible for these high scores. (3) A high incidence of fraud has been found in both subjects and experimenters. And it was J. B. Rhine who said that if there was the possibility of a trick the experiment should be rejected.

The fallacies are: (1) A machine relieves you of the need to guard against fraud. (Machine-scoring doesn't allow for checking by a second experimenter.)

K. Frazier

Sabbagh at news conference: The ratchet effect.

K. Frazier

Berglas doing blindfold reading

(2) The sheer mass of experiments can overcome individual flaws.

Magician James Randi recounted the sorry state of the Columbus, Ohio, poltergeist, a tale now familiar to *SI* readers. Randi was saddened by the fact that academics found great difficulty in making two statements: "I don't know" and "I was wrong."

Psychologist David Marks, in London on sabbatical leave from New Zealand, looked at parapsychology from the other end of the telescope and asked, "Why do people believe?"

We all have a system of hierarchically organized constructs. Core constructs are central to our identity while peripheral ones are more flexible and can be changed. The construct systems of a number of believers have been examined. The spiritual-versus-physical construct is the most resistant to change, and the predictable-versus-unpredictable is also resistant. Spiritual beliefs are held as axiomatic at the core level. They govern the overall cognitive system and are isolated from empirical considerations.

On the Eysenck Personality Inventory, believers are more neurotic than skeptics. They score 15, as opposed to the skeptics' score of just over 8, which is about average. Skeptics, far from fitting the stereotype of a closed-minded establishment, had more permeable and looser construct-systems. It was believers who had tightly organized construct-systems and were less flexible in the face of dissonant concepts.

Karl Sabbagh, television producer and writer, told us how to set up as practitioners of fringe medicine, without ever being wrong. He also introduced the idea that the brains of believers operate like ratchet mechanisms. Phenomena that reinforce beliefs wind the ratchet's grip tighter. But negative evidence, like reversing the winder of your watch, produces no corresponding unwinding and loosening of the ratchet's hold.

David Berglas, television's international "man of mystery," rounded off the final session with a demonstration of two effects that most people would consider psychic if they were not being performed by a magician: the prediction of a phrase freely selected from a newspaper and the correct identification while blindfolded of objects submitted from the audience.

So ended the conference. It was a

well-attended and lively couple of days. In many ways, it put a new twist on the common notion that it is the gullible who are put upon and need protection. Philip J. Klass summed it up well when he reminded us of the words of Francis Bacon: "A credulous man is a deceiver."

—*Lewis Jones*

Lewis Jones is a writer and a member of the U.K. branch of CSICOP.

'In Praise of Reason' Award Goes to Antony Flew

BRITISH PHILOSOPHER Antony Flew was honored with CSICOP's 1985 "In Praise of Reason" Award at the Committee's international conference at University College London. The award was presented to Flew "in recognition of his long-standing contributions to the use of methods of critical inquiry, scientific evidence, and reason in evaluating claims to knowledge and solving social problems."

Previous winners of the award are Martin Gardner and Sidney Hook.

In a spirited acceptance talk, Flew said he had once felt psychical research should be treated seriously but later realized that people "were all wrong about the philosophical implications of all those alleged facts." One thing happened and two things didn't happen to change his mind, he said. The first was "a total discrediting of *all* the work of [S.G.] Soal," the English parapsychologist whose experiments had once been considered the best evidence of psi, and "a great deal of discrediting" of other once-heralded work.

The two things that have not happened? There has been no "scientific and repeated demonstration of any psychical phenomenon," and "no one has presented even a half-way theory to explain any psi phenomenon."

—*K.F.*

David Marks

Flew (*left*) with Paul Kurtz: No scientific demonstration of psi.

CSICOP Council Meets in Paris, Hosted by French Colleagues

FRENCH SCIENTISTS and scholars tend to be highly skeptical about the paranormal, no doubt consistent with the rationalist tradition in France. The French public, however, like its counterparts in other countries, is fascinated with paranormal beliefs.

The Comité Français pour l'Etude dits Phenoménès Paranormaux was established in cooperation with CSICOP some half-dozen years ago. Various members of CSICOP's Executive Council have met with members of the cognate French group from time to time. This past summer, however, marked the first formal meeting between the two groups, when members of the Executive Council met with the French committee, who held a press conference, jointly hosted by *Science et Vie,* France's largest-circulation and most influential science magazine.

Thus, on June 25, a conference was held at the Gallerie Fraisch—a delightful Gallic touch, for where else would a scientific meeting be held in an art gallery! Maurice Gross, professor of linguistics at the Sorbonne, chaired the meeting and provided simultaneous translation of the papers given in English. Ken Frazier read a statement about the role of the SKEPTICAL INQUIRER; Jim Alcock, speaking in French, reviewed the state of parapsychological research; James Randi talked about the need for the advice of conjurers in framing scientific tests. Phil Klass spoke on France's role in UFOlogy. (It is the only country in the world to provide government financial support for UFO inquiry.) And Paul Kurtz, also speaking in French, reviewed the growth of belief in the paranormal worldwide and the work of CSICOP in response.

Various news media covered the conference along with *Science et Vie,* including France's leading socialist paper, *Liberation,* and France Inter (French national radio). The proceedings were rounded off with a convivial dinner of fine Gallic cuisine and wine. Among the key French scientists who participated in these important events were Yves Galifret, executive director of l'Union Rationaliste; Philippe Cousin, editor of *Science et Vie;* Michel Rouzé, science writer and journalist; Evry Schatzman, former president of the French Physics Association, and Claude Pecker, astronomer at the College de France. Both Schatzman and Pecker are members of the French Academy of Sciences.

These meetings helped to cement Franco-American relations between skeptics and augured well for future cooperation between the two communities.

—*Paul Kurtz*

CSICOP Invited on Italian TV, Protests Paranormal Series

CSICOP BECAME embroiled in a heated controversy in Italy this past summer. Indeed, *Europeo,* one of Italy's most important weekly newsmagazines, featured a story about CSICOP on its front cover, and the international edition of *Time* also featured a story.

It began when ten of Italy's leading scientists and all five of its Nobel Prize winners protested a 12-part series being run on RAI-TV (Italy's most influential educational network). The series, called "Misteri-O," was on parapsychology. Each of the hour-long segments presented parapsychological phenomena as if they had been confirmed by science, and without any critical scientific judgments expressed. The Italian scientists, in an open letter published in the newspaper *Republica* (Rome), asked that CSICOP's chairman be consulted and that CSICOP provide guests to present

the scientific point of view.

In response to the scientists' request CSICOP received a telegram from the producers of the series asking that we provide speakers. We immediately recommended Ray Hyman and James Randi, both of whom were to be in Europe at that time. The producers accepted Hyman (who appeared on June 27), but adamantly rejected James Randi, claiming that they did not want a prestidigitator on the program. The CSICOP Executive Council, meeting in Paris at that time, relayed its disapproval of what it considered an act of censorship, but to no avail. Did the producers fear Randi's trenchant criticism?

The Italian scientists, who knew of this development, nonetheless implored us to send someone else; and so, as chairman of CSICOP, I consented to appear on the program on July 5. The topic of this program was reincarnation, and it included largely uncritical claims about regressions to past lives and a discussion of the research by Ian Stevenson on remembrances of "earlier lives" by young children. I pointed out that much of this data had not been corroborated by independent researchers, that hypnosis with regard to regression was unreliable, and that, in any case, explanations other than reincarnation could be given for the past-lives phenomena. I also lodged a protest on public television on behalf of the 15 scientists and CSICOP about the unbalanced treatment of the paranormal on this series.

The next day, various Italian scientists in Milan (where the programs were being taped) convened a press conference in cooperation with CSICOP to make a further protest. *Il Giornale* and other newspapers carried the story.

Eduardo Amaldi, professor of physics at the University of Rome, has since been elected a CSICOP Fellow; and Silvio Garattini, director of the Mario Negri Pharmacological Institute in Milan, has been named a Scientific Consultant. We especially appreciate the fine work of Piero Angela, a prominent Italian television personality who regularly broadcasts objective and fair-minded programs on the paranormal that present the skeptic's point of view.

—Paul Kurtz

McDonnell Lab Loses Funding, Closes After Six Years

THE McDONNELL Laboratory for Psychical Research, the controversial facility at Washington University, St. Louis, closed down at the end of August, when its foundation funding ran out and was not renewed. Thus ended a short but curious episode in modern-day psychical research.

The laboratory was founded six years ago with a $500,000 grant from the late James S. McDonnell, head of the McDonnell Douglas Corp. The original grant was intended to support the laboratory for five years. An additional grant of $150,000 allowed it to extend operations for the sixth year.

The laboratory was established to attempt to detect and study psychic phenomena—ESP, clairvoyance, psychokinesis, etc. McDonnell, a much-honored aeronautical engineer, had a longtime interest in paranormal phenomena. When he died in 1980, responsibility for his company's charitable efforts was delegated to the McDonnell Foundation, but according to news reports neither the Foundation, headed by McDonnell Douglas vice-president Michael Witunski, nor the administration of Washington University had much enthusiasm for "MacLab," as it was called.

Michael A. Thalbourne, the lab's chief researcher, said he does not believe

the decision to discontinue funding had anything to do with the famous Project Alpha hoax. The hoax, engineered by magician James Randi and carried out by magicians Michael Edwards and Steve Shaw, was intended to determine whether the labs' methods were sufficiently rigorous to detect magicians' trickery. The revelation of the hoax by Randi after the young magicians had undergone experimentation at the lab for two years while successfully posing as psychics (see *SI*, Summer and Fall 1983) was an embarrassment to the facility. The episode dramatized the need for tighter controls of parapsychological experiments.

—*K.F.*

Return to the 'Psi Gap': More 'Psychic' Weaponry Claims

TWO MORE COLUMNS on "psychic" weaponry, "psychic" spying, and the "psi" gap were published this summer by syndicated columnists Jack Anderson and Dale Van Atta.

The first, published in newspapers of July 17, 1985 ("Kremlin Pumps Rubles into Psychic Weaponry," noted one headline), began: "There are new developments on the psychic-warfare front: The Soviets are outspending us by at least 70 to 1 in occult research."

The second, published in newspapers of August 12, 1985 ("Sources Claim ESP-ionage Psychs Out Secrets"), began: "A decade ago, an American agent penetrated a previously unknown, top-secret Soviet military base in the Urals. The spy described the base in minute detail, according to a Central Intelligence Agency report."

These bring to at least five the number of articles the Anderson/Van Atta team has published on these subjects. They are a curious mixture of tentative skepticism ("Most responsible scientists take a dim view of such self-proclaimed parapsychological practitioners . . ." and "For years the Pentagon psychic warriors were allowed to pursue any nutty will-o'-the-wisp that flew by") and downright credulity ("Several sources close to the mind-expanding study claim solid successes" and "Once again, in the years that followed, the CIA found to its chagrin that the psychic was right").

The August 12 column is devoted to a claimed experiment ten years ago at what is now SRI International. The experimenter is a familiar name, Harold Puthoff.

As we have noted before ("Touting Psychic Wonders in the Mainstream Media," Winter 1984-85 and "CRS's Psi Report: Plugging the Paranormal to Policymakers"), these and other journalistic reports on such "experiments" almost always fail to indicate the skepticism with which the experiments are considered by informed scientists, particularly psychologists. There is very little to indicate the claims leaked from CIA files have undergone any rigorous outside scrutiny. It is discouraging to think our country's own intelligence apparatus would take them at face value.

Anderson and Van Atta (not to mention the CIA) would do well to read carefully the lengthy critique "The Muddled 'Mind Race': Outracing the Evidence" (*SI*, Spring 1985), by psychologist Ray Hyman, of the recent book co-authored by Russell Targ, Puthoff's former colleage at SRI. We also recommend Martin Ebon's article in this issue on Soviet parapsychological research. Ebon notes that most of this Soviet research is published in newspapers, not in scientific journals. This in itself should be a clue to its probable credibility.

—*Kendrick Frazier*

Information Science Bulletin Misses Info Critical of Psi

The following letter was sent by SI *reader Vaughn S. Zidell, of Encino, California, to the editor of the* ASIS *(American Society for Information Science)* Bulletin, *in Washington, D.C., protesting an article in the* Bulletin. *The article's author had begun his research into the scientific literature on psi with a computer search of the Science Citation Index for the name "Targ." This led, he noted, to a "variety of 'surprising' hard science citations." (Russell Targ is lead author of* The Mind Race, *critiqued in* SI*'s Spring 1985 issue.) The article went on to express surprise at "the variety of highly regarded scientific journals" that have published literature on psi. At one point, the author states: "Some things are certain. The phenomena of 'remote viewing' is real, replicable and statistically valid."*

Dear Sir:

I feel compelled to take issue with the article "Information Science and the PSI Phenomenon" that appeared in *ASIS Bulletin,* vol. 11, no. 5 (June/July 1985). The author, Emil H. Levine, vastly misled his readers concerning the scientific status of psychic phenomena. His uncritical acceptance of the reality of psi and his utter failure to even mention the numerous technical papers that scrutinize, qualify, and/or invalidate the claims of psychic researchers only tend to entrench the plague of irrationalism that seems to be sweeping the country.

This oversight may have been due to a methodological bias in Mr. Levine's selection procedure. He relied on a Science Citation Index search conducted by a coworker, a search that began with a prominent advocate of the reality of parapsychological occurrences. Had he performed his own research, beginning, for example, with the search statement "AU=Randi," he would have been led to the work of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) and let us hope to a vastly different conclusion concerning his question, "Are PSI phenomena of serious interest to information science?"

CSICOP, which comprises eminent scientists and scholars, has shown quite forcefully that there is no evidence for the reality of psi that meets the critical standards of science. Since there is no evidence, there is no warrant for the belief that psychic information can be transferred, and thus by Mr. Levine's own standards there is no basis for interest by the information science community.

I will attempt no point-by-point refutation of Mr. Levine's bland assertions ("Some things are certain. The phenomena of 'remote viewing' is real, replicable and statistically valid," for example). It is all there in the literature of CSICOP.

It is regrettable, however, that the editors seem to have been largely unaware of the work of this group and saw fit to render only a mild disclaimer in the author profile. Such an oversight tends to enshrine Mr. Levine's statements with an intellectual respectability they do not deserve.

Vaughn S. Zidell
Encinco, Calif.

Quantum Theory and Psi: Grasping at Quantum Straws

THE THEORISTS AMONG the parapsychologists have made much of the instantaneous transfer of information implied by the experiments of Alain Aspect and his group at the Saclay lab in France. These experiments, an implementation of the Einstein-Podolsky-Rosen (EPR)

thought-experiment, have over the past few years provided experimental verification of both Bell's Theorem and the predictions of quantum theory.

An entertaining exposition of this subject, written by N. David Mermin, appeared in the April 1985 *Physics Today*, the journal of the American Institute of Physics. The title of Mermin's article, "Is the Moon There When Nobody Looks?" is a paraphrase of a remark by Einstein. The article discusses the history of the EPR thought-experiment since its first appearance in 1935 as a demonstration of the incompleteness of quantum theory. He follows its impact on scientific thought through Bell's Theorem in 1964 to the experiments, such as Aspect's, that have demonstrated that the quantum-mechanical description of the world is correct and it is our, and Einstein's, intuition that is at variance with reality.

Mermin describes the EPR experiment in terms of a particle source and two detectors. Each detector has three possible settings and two possible responses on detecting a particle. The experiment consists of generating many pairs of particles and recording the responses of the detectors. The settings of the detectors are varied at random and are also recorded. The real experiment uses photons whose spins are measured at three angles separated by 120 degrees.

A sample of the experimental results is given in the article. They can be summarized as follows. In the long run the responses of the detectors match each other exactly half the time. On those occasions when the two detectors happen to have the same setting the responses always match. That's all.

Unfortunately, when we try to postulate a mechanism that can produce this result, the answers always come out wrong. Any theory that assumes that the particles share some defined property that makes the detector responses match when the detectors have the same setting gives too high a value for the ratio of matches to total runs when the detector settings are random. Any plausible mechanism predicts five matches out of nine runs. This is an example of Bell's Inequality in action. In this case it amounts to saying that the detector settings have nine different combinations and that nine is not an even number.

Since we cannot invent any property of the particles that gives the correct result (quantum theory predicts, correctly, that the probability of a match between two detectors depends on the square of the cosine of the angle between them, but it does not say why this happens) the next resort in some quarters has been to hypothesize an invisible and instantaneous message from the particle that first encounters a detector to tell the other particle what to do when it, in its turn, encounters a detector. This, probably wild, hypothesis has led to the definitely wild hypothesis that anything subatomic particles can do psychics can do better and Lo! a mechanism has been found to explain psi phenomena. Mermin does not mention this hypothesis but does quote a think-tank memo addressed to the Pentagon that claimed that the EPR experiments demonstrated the feasibility of unjammable communication with nuclear missile submarines. We all grasp at our own straws!

Oddly enough, this question of how, if at all, the particles communicate is similar to the 50-year-old puzzle of Young's Two Slit Experiment. This provoked a debate about which slit the photon went through since its behavior depended on whether it had one or two slits to pass through. One school had the photon going through one slit but "knowing" that the other slit existed. That could have been worked up into a theory of psi years ago if anyone had thought about it.

Mermin suggests that, when we detect a particle, it is our knowledge of the other particle that changes, not its state. Since the state of each particle is random and since nothing we do in detecting one particle affects the state of the other it is difficult to see how any useful information can be transmitted. We might as well expect two people to be able to pass messages after giving them two identically stacked decks of cards. Meanwhile, Mermin leaves us with the thought that quantum theory is the closest thing to magic that really happens and that the best we can do is enjoy it without attempting to read too deep a meaning into it. Perhaps we should wait for further developments in quantum theory before we start using it to prop up improbable hypotheses.

—*Tom Napier*

Tom Napier is a physicist and an electronics engineer. Though he has had lunch with John Bell on a number of occasions, regrettably the conversation never turned to quantum theory.

Colorado Organization Active in Peoples' Fair

THE COLORADO organization for a Rational Alternative to Pseudoscience (CO-RAP) had a booth at the annual Peoples' Fair sponsored by a neighborhood association in Denver. The weekend event featured 550 booths of arts and crafts, a wide variety of social-cause organizations, and food. Entertainment included magicians, singers, dancers, and clowns. Each year this gala affair is blemished by astrologers, Tarot-card readers, palmists, graphologists, "psychics," and cults like Eckankar. One year there was an iridologist.

CO-RAP was new on the scene. Response varied from surprise that we were there and genuine interest to the "my mind is already made up so don't confuse me with the facts" attitude. We sold more than $250 worth of literature—books (on consignment from Prometheus) and back issues of the SKEPTICAL INQUIRER. Fliers giving our statement of purpose and membership cards were given to people who showed the most interest.

A palmist, several "psychics," and an astrologer in a wizard's purple robe and high cone cap came over to see what we were all about. Our director challenged the astrologer to debate astronomer R. B. Culver, a CO-RAP member and coauthor of *The Gemini Syndrome: A Scientific Evaluation of Astrology*. He passed the buck to a man who turned out to be a person we had already contacted and who had declared that such a debate would be impossible because astrologers and scientists don't speak the same language.

We had a paid ad in the *Fair Guide*. Twenty-five thousand copies of the guide were distributed in advance by sponsoring businesses and on the fairgrounds. The fair also had excellent coverage by the general news media. We acquired some new members and inquiries are still coming in.

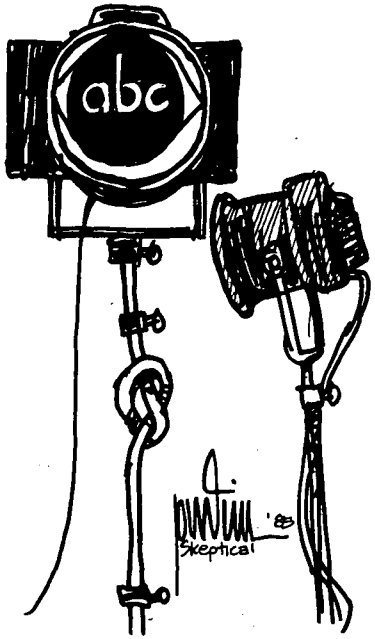
There was splendid cooperation on the part of members who volunteered their time, talent, and money.

Organizations in other cities that have similar events would do well to take advantage of this kind of outreach.

—*Elver A. Barker*

ABC's Eye on Hollywood: Fuzzy Focus on Paranormal

RECENTLY "Eye On Hollywood," a late-night program on ABC-TV, has been presenting a series of programs on the paranormal. Each program features testimony from psychics and peo-



ple who claim to have had paranormal contacts.

The "reporters" do not question these people, but seek to aid them in elaborating their testimony, according it full belief and frequently suggesting that evidence supporting such claims is suppressed by authorities. There is no effort to interview scientists, magicians, or investigators who disagree with these beliefs.

One program was devoted to a very definite exposition of life after death. On another, people who claimed to have seen UFOs were interviewed. Photos and supposed filmstrips of UFOs were shown, along with "video recreations." Subjects were interviewed who unanimously testified that the government was covering up.

On another program, the "Eye on Hollywood" reporter offered himself as a subject for a "psychic viewing" experiment. The "psychic" gave him a jewelry box and asked him to tell her what was inside it and to whom it belonged. The reporter guessed that the object inside was a pin. Later it turned out to be a ring, but no one commented that this was an outright error.

The reporter then guessed that the ring belonged to a man, whereupon the psychic informed him that "you can always change your mind." Then the reporter claimed that the object belonged to a woman, whereupon he was congratulated on a successful viewing, and the whole experiment was treated as a success.

—Jeremy Larner

Jeremy Larner has written a number of novels and nonfiction books as well as screenplays.

Dinosaur Expedition: On the Trail of Mokele-Mbembe

WHAT TYPE of strange animals lurk within darkest Africa? Giant soft-shell turtles, ferocious gorillas, and the legendary Mokele-Mbembe, a living dinosaur, claims Herman Regusters, a Seattle resident. This spring Regusters announced that he would soon start off on his second Congo expedition to penetrate the dense jungle between the Oubangui and Sanga rivers in the People's Republic of the Congo. His news release caused considerable hoopla among local media and generated some national coverage.

According to Regusters, the second expedition will try to return with better photographic evidence of the creature, including motion pictures. Regusters told me that the animal they saw, on five occasions in 1981, closely resembled a dinosaur of the suborder Sauropoda. In presentations to the press, local clubs, and area primary and secondary schools, Regusters outlines the evidence for the existence of dinosaurs in the Congo. Key items in Regusters's arguments include eyewitness accounts,

Photo by Michael R. Dennett, April 1985.

Regusters with his unconvincing photograph taken during his 1981 expedition. Object in lake is allegedly the creature they saw.

audio tapes, and a photograph. Perhaps the most impressive evidence is his claim that the U.S. Geological Survey and the University of Arizona have carbon-dated a Sauropoda bone at less than 70,000 years. (Dinosaurs are believed to have been extinct for 65 million years.)

However, when I pressed Regusters to find out more about the USGS study he became emotional and deliberately changed the topic. I was able to talk with researcher Tim Jull at the University of Arizona (Tucson), and he confirmed that he had in fact done a test for Regusters. He did not confirm what Regusters had said about the test. Jull's report concluded that the sample was completely mineralized and not suitable for carbon-dating. He added that he had no way of knowing if the bone he had analyzed was in fact a dinosaur bone.

The single photograph of the creature was unimpressive; it could have been a log or a crocodile. What tended to depreciate the photographic evidence even more was the disclosure that, of the 23 rolls of film taken, all but one frame was underexposed.

Seattle Times reporter Elizabeth Rhodes also checked on some of Regusters's statements. In an article for her newspaper, Rhodes identified some of the discrepancies she found. Tactfully saying that glitches had cropped up, she wrote, "like the fact that at least one of what Regusters has listed as their cooperating researchers, Cal Tech's department of planetary sciences, disavows any connection with them. (Told this, Regusters said the researchers' list he had shown to the press was only preliminary.)"

Other assertions about the project were difficult to verify: Cornell University had been listed as one of the expedition's sponsors, but no university official could confirm this. Still other statements by Regusters seemed extraordi-

nary, at the very least. Regusters believes that, in addition to the numerous sauropods, the Congo supports a population of triceratopses. He claims that evidence of the presence of triceratopses has been seen in the bodies of slaughtered bull elephants.

The most telling argument against Regusters is the basic incongruity of his own stories. At one point he tells about the many gorillas they encountered. Yet he is unable to say which of the three subspecies of gorillas they saw; nor does he know what type of gorillas are in the local zoo. Regusters is sure that the apes he saw were ferocious, a statement he made repeatedly. (Zoo officials said that, although gorillas can be dangerous, they are typically all bluff.) He went on to describe graphically the size of the great apes' canine teeth and explained that the natives feared the gorilla more than any other creature in the jungle. This last statement seems inconsistent with other claims. If there really were 35-foot brontosauruses in the lakes and 8-ton triceratopses rampaging on land, would gorillas be the most feared creature?

At this writing, along with many of the facts, the expedition's backers have also disappeared. Until new financing is secured, proof of Mokele-Mbembe will have to wait a little longer.

—*Michael Dennett*

More Hype of the Mars 'Face'

WHEN THE *SAN FRANCISCO Chronicle*'s "This World" section did a four-page feature article on the "Face on Mars" (July 14, 1985), it neglected to consult planetary scientists. Scientists have long known of the "face" and "pyramids" on Mars and are quite certain they are natural features. The eye and mind have a readiness to see familiar shapes in disparate patterns. (See Martin Gardner's column, *SI*, Fall 1985.)

The Astronomical Society of the Pacific, a leading astronomy group active in public education, is headquartered in San Francisco. Its executive director, Andrew Fraknoi, who used to write an astronomy column for the *Chronicle*, complained to the section's editor:

"I was sad to see your author and you taken in by the wily publicity effort concerning the so-called face on Mars. . . . There is far less to the mysteries in the article than meets the eye. What surprised me is that the editors of the *Chronicle* would publish a piece in which only one side in a controversial issue was represented. Not a single scientist outside the group was interviewed; not a single dissenting voice or skeptic was allowed to have a say. Even Carl Sagan's careful and highly effective debunking of the entire question [*Parade*, June 2, 1985] was dismissed without a quote. Instead the piece was filled with exaggerations and misstatements which your author accepted at face value."

Fraknoi noted the irony that the *Chronicle* has on its own staff one of the finest science writers in the country, David Perlman, who could have been consulted for guidance, and that the head of the Viking Imaging Team, Michael Carr, one of the world's experts on the surface of Mars, lives in Menlo Park, within the *Chronicle*'s circulation area. Consulting a skeptic, however, "would have burst the highly effective fantasy woven in the piece." Concluded Fraknoi: "I just wonder if the many students, teachers, and interested people who regard the *Chronicle* as an important source of current science information don't deserve better."

Fraknoi's letter was intended for the section's editor and was not published, although the *Chronicle* did publish another letter that made many of

the same points. Fraknoi also talked with the editor, Lyle York. Her response was perhaps typical. She was "very pleasant but singularly unconcerned about the damage the article might have done," Fraknoi told the SKEPTICAL INQUIRER. "I told her that teachers and students often use such articles in the classroom and that it had been rather a disservice to readers who had not heard both sides of the story. But she felt that the article was about the author's personal 'conversion' more than the validity of the science, and that the issue was not really significant enough to pursue."

What more can be done? Not much. Perhaps just to hope that the article was an aberration. As Fraknoi notes, the *Chronicle,* with Perlman's guidance, "usually does a pretty good job of holding pseudoscience to a minimum."

—*K.F.*

Diet Quackery at WBZ Boston

IN MID-SUMMER, 1985, "The Maynard in the Morning" program on Boston's WBZ-Radio (Group W) promoted a quack diet. The diet promised that one could "lose 10 to 17 lbs. and feel like a million in only seven days." It contained two dead giveaways that signal a quack diet. One was the claim that "the foods eaten burn more calories than they give the body in caloric value." The other is the claim that the diet will "flush your system of impurities and give you a feeling of well-being you never thought possible." Both these claims are classic nutrition nonsense.

Copies of the diet were distributed on WBZ stationery. A complaint about the uncritical promotion of such a quack diet was directed to the station. A. B. Hartman, vice president and general manager of WBZ, replied: "The station does not deem itself an authority on nutrition—WBZ merely disseminates information." This comes close to saying that the WBZ management doesn't care whether what they tell their listeners is correct or not. Readers in the Boston area may wish to judge WBZ's overall reliability by this reprehensible standard.

—*Terence Hines*

CSICOP Tenth Anniversary Fund
B. F. Skinner, Honorary Chairman

B. F. Skinner has agreed to serve as Honorary Chairman of the CSICOP Tenth Anniversary Fund. Dr. Skinner notes that he is extremely busy with research and writing and seldom takes on additional projects, but he feels the work of CSICOP is so important and unique that he is breaking his general rule.

Similarly, there are many calls upon each of us for our time and financial resources, but CSICOP is at a crossroads and really needs a major infusion of support to ensure its long-term viability. The Committee is small, but its influence has been impressive. One of the major reasons for this is the catalysis of enthusiastic support by *SI* readers who take initiatives ranging from lobbying local schoolboards to founding regional organizations and new publications.

CSICOP and the SKEPTICAL INQUIRER will be ten years old in 1986. Thanks to your subscriptions and contributions, we provide a much-needed skeptical voice in the midst of a cacophony of sensationalized and credulous reports of old and new paranormal claims. We sponsor conferences, have greatly expanded our outreach to the news media, increased our support for the investigation of paranormal claims, and are fielding an increasing flow of inquiries from the media and the general public. The SKEPTICAL INQUIRER is the *only* magazine of its kind; we think it does an essential job.

We plan to develop a definitive library/archive/database on paranormal claims, to establish liaisons with other organizations, to expand our program of providing speakers to public meetings and interviewees for the mass media, and to produce audiovisual resources for use in schools. We must upgrade our information resources and our ability to disseminate this information if we are to achieve CSICOP's potential for constructive influence on public thought and scientific research.

We will be very grateful for your tax-deductible contribution, large or small. The Tenth Anniversary Fund will guarantee our future.

Paul Kurtz, *Chairman*

Executive Council: James Alcock, Kendrick Frazier, Martin Gardner, Ray Hyman, Philip J. Klass, Lee Nisbet, James Randi

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MARTIN GARDNER

Notes of a Psi-Watcher

Psi Researchers' Inattention to Conjuring: Will the Dreary History Ever Improve?

LAST JULY the McDonnell Foundation, which funded the McDonnell Laboratory for Psychical Research at Washington University, St. Louis, announced it had withdrawn funding. A wise decision. The lab had become an albatross around the university's neck after Randi's notorious Alpha experiment made clear that Peter Phillips, the lab's director, though a competent physicist, had no comprehension of how to test supposed psychics.

When psychics start bending metal, rotating motors, moving objects, and performing other feats that imitate conjuring, there are only two sensible ways to conduct an investigation: either have a knowledgeable magician present during the testing, or take a few years off to learn the art of close-up magic.

One of the dreariest aspects of psi history is the failure of otherwise intelligent researchers to understand this simple fact. Everyone now knows that Uri Geller is a con artist, except for a few diehards who still think he doesn't cheat *all* the time; but consider the damage Uri has already done to the psi community. Over and over again researchers and writers, ignorant of conjuring, have made fools of themselves by declaring their belief in metal-bending. Professor John Taylor, a British mathematical physicist, was duped into writing a preposterous book about the "Geller effect" before he discovered he had been hoodwinked. Physicist John Hasted produced an even funnier book about the wonders of metal-bending. Neither Taylor nor Hasted deemed it worthwhile to seek the help of conjurers before starting their amateur investigations. To Taylor's credit, he later rejected metal-bending, but to this day he has been too embarrassed to admit how gullible he was.

In the United States the damage done to psi research by Uri has been equally great. Both Helmut Schmidt and E. H. Walker, the two leading proponents of the quantum mechanical explanation of psi, were taken in by Geller. As far as I know they may still be on the fence with respect to Geller's "sometime" powers. Science writer Charles Panati was so overwhelmed by Uri's simple tricks that he edited *The Geller Papers,* a book so worthless that it will be years before the damage Uri inflicted on his career can be repaired.

I could go on and on with other recent cases of parapsychologists who

never grasped the fact that magicians are the only experts on close-up deception. Jule Eisenbud, as far as I know, still believes Ted Serios could project his thoughts onto Polaroid film, although magicians have explained how Ted could have faked it with a palmed optical device. I suspect that every leading parapsychologist in the country now realizes that Eisenbud was deceived, but are too timid to say so. It never occurred to Charles Honorton to ask magicians how his friend Felicia Parise moved a pill bottle across her kitchen counter before he wrote a paper about this great event. Does Honorton still think Felicia did not use an invisible nylon thread? Apparently he does.

What makes this so hilarious is that it has all happened before, in the days of the great mediums. Did Conan Doyle or William Crookes or Oliver Lodge ever take a disguised magician to a séance? If so, I never heard of it. Among British journalists, the most tireless drumbeater for spiritualism was W. T. Stead, who died in the sinking of the *Titanic*. It would be hard to decide who was the biggest mark, Stead or Doyle. Stead thought it terrible that the Society for Psychical Research would try to apply scientific methods to mediums. In 1909, he attacked the Society by picturing himself as shipwrecked and drowning. (Believers in precognition have seized on this speech as evidence for psi premonition!) Suppose, said Stead, that instead of throwing him a rope someone shouts: "Who are you? What's your name?"

"I am Stead!" he imagined himself shouting back. "*I am drowning here in* the sea. Throw me a rope." His rescuers continue: "How do we know you are Stead? Where were you born? Tell us the name of your grandmother."

"What are known as psychical research methods were abhorrent to him," wrote spiritualist Edith Harper in her book *Stead the Man* (1914). "He held them truly unscientific. . . . He said he would rather die in the workhouse than believe that anyone would tell him a deliberate falsehood for the mere purpose of deceiving him." I once had lunch with an occult journalist who made an almost identical remark about his inability to believe that a charming fellow like Geller would ever try to flimflam anybody.

Recently I obtained a copy of one of the strangest books on spiritualism ever written, or rather ghostwritten. It is *Lights and Shadows* by that magnificent charlatan D. D. Home. Conan Doyle was furious with Home because in this book the Scottish medium exposed the methods of rivals who produced phenomena unlike his own—slate-writing, for instance. Of course Home carefully avoided any mention of his own methods. Even when he heard it from the medium he most admired, poor gullible Doyle couldn't believe that other mediums cheated as much as Home said they did.

Daniel Dunglas Home

This is how proponents portrayed Home's "levitations," but they were done in the dark.

Over and over again Home chastises his rivals for conducting séances in darkness, always adding that his own were in the light. Is it true that Home's séances were in the light? It is not. Home always *began* his sittings in the light. There would be table vibrations, raps, singing, talking, and praying; then the gas lights would be dimmed or extinguished. The room was seldom totally dark because it was necessary to see such things as fluttering white hands.

Pause to meditate on the absurdity of such darkness. Why would friendly spirits, anxious to contact loved ones, refuse to manifest themselves in significant ways except in the dark? If Home could flit about a room near the ceiling, as he often did, why did he always do this in rooms so black that the only proof he was up there was his own voice describing these Peter Pan flights? An article by Robert Bell in the *Cornhill Magazine* (August 1860) contains a dramatic account of Home floating around in "pitch darkness." How did the sitters know Home was really up there? As he had done hundreds of times, Home left a mark on the ceiling!

It is often said that Home was never caught cheating. Well, it all depends on what you mean by "caught." In the same *Cornhill* article, Bell tells how he broke one of Home's cardinal rules by taking his hands off the table and clutching a spirit hand. "It was palpable as any soft substance, velvet or pulp, but pressure reduced it to air." White rubber gloves that glow in the dark were the stock-in-trade of nineteenth-century mediums. There are other records that strongly suggest ways in which Home cheated. In France, Baron Morio de l'Isle looked under the table and saw an empty shoe. After a woman said a spirit had touched her, Morio saw Home's foot slip back into his shoe. It is said that this ill-fated séance was one reason for Home's abrupt departure from France.

Such incidents are rare in Home's career, as they are in Uri's, and for a simple reason. Like Geller, Home would not perform in the presence of magicians or even skeptics unless he sized up the skeptic as simple-minded. If a sitter in one of Home's séances so much as hinted doubts, the spirits would ask the skeptic to leave. Would not such negative thoughts dampen the spirits' spirits? We hear the same rationalizations today from psi investigators who want to exclude magicians and skeptics as observers.

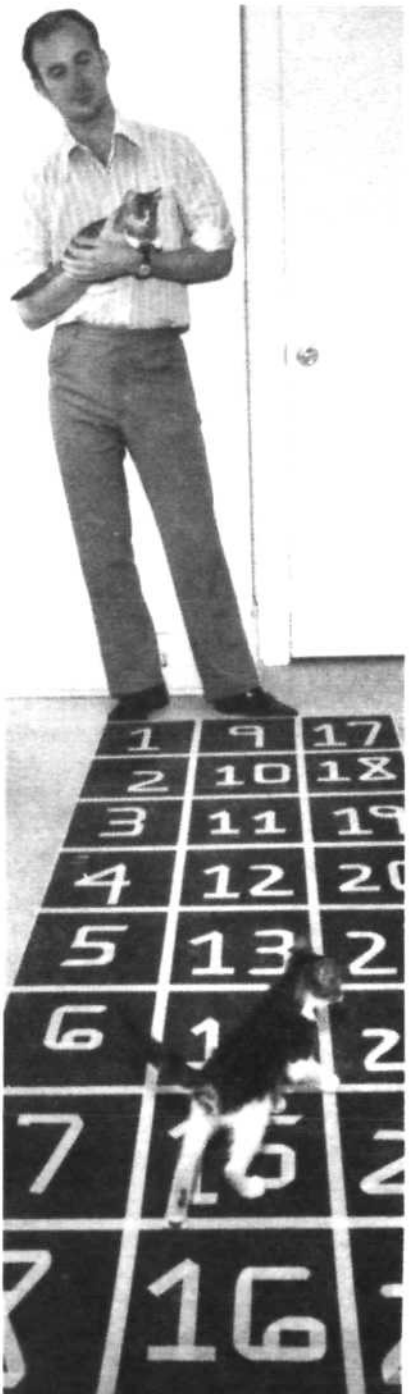
The result of course is that dramatic PK phenomena—metal-bending, translocations, levitations, poltergeist activity—always occur when nobody capable of detecting fraud is watching. I write at the time of Edinburgh University's announcement that Robert Morris, of Syracuse University, has been appointed to Edinburgh's new Chair of Parapsychology, endowed by half a million pounds from the late Arthur Koestler's estate. Will Morris do a bet-

ter job in Scotland than Phillips did in Missouri? Or will he too find excuses for excluding magicians when he starts testing extraordinary powers?

Morris is a firm believer in the paranormal, though more cautious than most of his colleagues. He has what he once called "a high tolerance for ambiguity." As a younger man he was not always so cautious. While getting a doctorate in psychology at Duke University—his thesis was on the mating habits of ring-necked doves—he also worked at the nearby Psychical Research Foundation. This had been set up in 1960 to investigate evidence for survival after death, with William Roll, the well-known authenticator of poltergeists, as director. Morris was Roll's research assistant.

The best known of Morris's many experiments were his investigations of the powers of Blue Harary, a "psychic" who recently teamed up with Russell Targ to form a new psi-research organization and to coauthor their book *Mind Race*. Morris's tests strongly confirmed Harary's ability to go "out of body" to a nearby lab where his spirit influenced the spirit of Spirit, Blue's pet kitten.

Another notable experiment was designed to test precognition in rats. The clever scheme was this: Monitor the behavior of a group of rats, select a few animals randomly, kill them, then see if anything in their previous behavior suggested foreknowledge of their doom. According to D. Scott Rogo, who describes these experiments in his *Parapsychology: A Century of Inquiry*, the rat test was "inconclusive." Morris tried again with goldfish. This time the fish were not killed, but simply held out of water long enough to cause "stress." Success! "Those goldfish that had been removed from the tank," Rogo writes, "were the ones who had been more active in the base-line period." This, Rogo informs us, could have been due to "an ability of the animals to



Morris, then at the Psychical Research Foundation, in early experiments with animal psi.

show anxiety because of an awareness of what would be happening to them."

As these experiments indicate, Morris has been intensely interested in "animal psi." His paper "The Psychobiology of Psi," in Edgar Mitchell's *Psychic Explorations* (1974), is a readily accessible introduction to his views. Unfortunately, this survey of outstanding results on animal psi included Walter Levy's research at Dr. Rhine's laboratory on the PK power of live chicken eggs, having been written before Levy was caught cheating.

"Evidence for psi seems obtainable from a wide range of species and central nervous system complexity levels . . . ," Morris concludes. "In many ways, animals appear to respond to psi tasks in the same way that humans do—psi missing under negative conditions, habituation, response bias effects, and so on." He adds the warning that a major difficulty in such tests is that an experimenter's PK may bias results. He cites "evidence" that researchers can influence the movements of paramecia and wood lice, and Schmidt's famous tests with cockroaches, in which the results suggest it was Schmidt who influenced the randomizer because he hates cockroaches.

In recent years Morris has moved away from animal psi to other areas. In 1984 *Omni* reported (May issue) an experiment to test the abilities of humans to influence computers. Out of 33 subjects, the computer crashed with 13. Morris reported that these 13 were significantly more skeptical of PK than the others. The crashing may not have been the result of PK. Morris admitted—his high tolerance for ambiguity coming to the fore—but he added: "Why then did it occur so consistently in relation to the attitude of the people involved?"

In brief, Morris is a believer, but more hesitant than most parapsychologists in making extraordinary claims without extraordinary evidence. It will be interesting to see what results emerge from the Edinburgh laboratory. Let us hope that the lesson taught by the St. Louis fiasco will not be forgotten and that before Morris tests a psychic who performs what looks exactly like mediocre magic he will have the foresight and the courage to have someone on the scene capable of detecting fraud? •

Prior Beliefs and Antiscience

Prior beliefs constitute the emotional commitment that makes pseudoscientific ideas, no matter how preposterous, appealing and satisfying. Believers are unconcerned about the scientific absurdities of pseudoscience, not because they are incapable of understanding them, nor because of emotional instability, but rather, because they have been previously committed to a world view in which meaning and purpose take precedence over precision and accuracy. Thus, extraordinary explanations persist because people want to believe them.

—Leonard Zusne and Warren H. Jones, *Anomalistic Psychology*, Lawrence Erlbaum Associates, 1982.

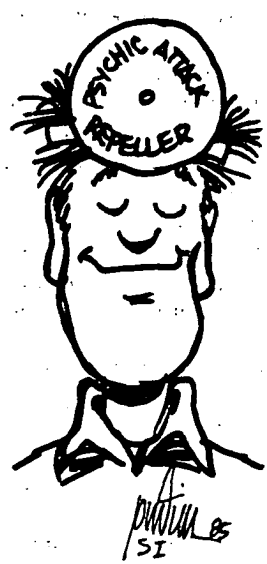
ROBERT SHEAFFER

Psychic Vibrations

AS IF "PSYCHIC WARFARE" did not give us enough to worry about, we now must worry about being individual victims of "psychic attack," especially in light of noted parapsychologists Russell Targ and Keith Harary's warning in their book *The Mind Race* that "it seems quite likely that an unethical psychic practitioner could deliberately put thoughts into a potential victim's head in such a way as to disorient him, confuse him or make him feel depressed."

But don't despair, for it may be possible to *protect* yourself against such an attack, reports D. Scott Rogo, consulting editor of *Fate* magazine. In a recent issue (January 1985), Rogo described experiments in "psychic shielding" carried out at the Mind Science Foundation in Texas. Psychic attacks presumably operate using the phenomenon known as "allobiofeedback," which is similar to the ordinary biofeedback that enables us to influence our autonomic nervous functions, such as heart-rate, except in this case we are influencing the autonomic functions of *someone else*, via psychokinesis. How this gives us feedback is not immediately clear.

To test the existence of a "psychic shield," the experimenter attempted to disrupt the functioning of a routine ESP-card experiment by mentally constructing "a massive monolith between herself and the subject." In this curious situation, chance scores suggest the existence of opposite but equal psychic forces. (We'd be far more interested in the control runs of the study, in which the presumably above-chance scores demonstrate nothing more than ho-hum clairvoyance.) Researchers at the Foundation were uncertain whether a genuine psychic shield had been erected or whether the experimenter's facial contortions while "shielding" had merely distracted the subject to the point where ESP was impossible. They concluded



that it didn't really matter, since their intention was to determine whether the functioning of ESP could be disrupted. In future experiments along these lines, I would suggest that the presence of a knowledgeable skeptic would create a barrier against psychic powers far more formidable than anything they have henceforth dreamed possible.

* * * * *

Those *Fate* readers surviving the "psychic attacks" unscathed had better watch out for vampires. The May issue of *Fate* described the "strange nocturnal goings-on" in the Highgate cemetery near London. The article, reprinted from *Pursuit* magazine, tells how passersby began sighting a figure dressed in dark clothing "skulking around the old graveyard." It walked "with incredible speed and swift, long strides." (Subsequently, it was learned that occult groups had been holding ceremonies there, which, it is admitted, may have accounted for "most of" the strange sightings.) However, a woman who lived nearby began to "sense" strange presences in her apartment, and her strength began to ebb. "On the right side of her neck, over the carotid artery, were two small wounds like punctures." When her apartment was secured against vampires, using crucifixes, holy water, and garlic, her health gradually began to improve. Then dead animals began to be found in the vicinity, allegedly drained of blood.

Three years later, a second woman began to languish, also with two small wounds on her neck. She sleepwalked right into the cemetery, vainly struggling to open a tomb from which investigators reported hearing "a deep, booming sound." An exorcism and some garlic seemed to have slowed down the vampire's activities for a time, but not until the body was reportedly exhumed in 1974 and a stake driven through its heart did its nocturnal meanderings stop.

This chilling account was followed up in the August *Fate* with "The Undead in Rhode Island," an account of nineteenth-century ghoulish goings-on that did not cease until the body of the suspected vampire was exhumed and its heart removed. The author attributes the reports of vampires in Rhode Island to "bizarre backwoods superstitions," but suggests that these beliefs were probably "bred and reinforced by certain little-understood natural or paranormal phenomena."

Also in the August issue is an article that begins: "I used to have doubts about the paranormal. . . . Now I am certain I heard the ghosts of a doomed Roman legion marching to its fate 2,000 years ago."

* * * * *

The Institute for Creation Research (ICR) continues to demonstrate its leadership in the field of "creation science." It recently took a group of students on a "field study course" through the Grand Canyon, because "nowhere

else offers a better setting in which to study, interact, and understand the geologic effects of the Creation and the Flood." Among the things they learned was "how to distinguish between Creation rock and Flood rock," a distinction not yet made by geologists, who still classify rocks using terms like *igneous* and *sedimentary*. They also learned to "decipher" the geological evidence for biblical catastrophes, another rare skill.

The ICR has also announced its findings on SETI, the Search for Extraterrestrial Intelligence: There's no need to look, because there couldn't be anyone out there, since there's no mention of them in the Bible. The ICR's director, Henry M. Morris, writes, in lucid pre-Copernican prose: "Evolutionists almost wistfully grasp every faint clue they can, hoping to find evidence that there really are other worlds where life might have evolved . . . but to date there is not one iota of real evidence in either science or the Bible that intelligent beings [except angels!] were either evolved or created anywhere in the universe except on Earth. In any case, it is the planet Earth which is the focal point of God's interest in the universe." •

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LAWRENCE CRANBERG

Guest Forum

Pseudoscience and the Associated Press

CSICOP TOOK A BOLD and extremely important initiative in writing to every daily newspaper in the United States asking them to publish a disclaimer with their astrology columns (*SI*, Spring 1985). I propose another initiative, this time directed not at a particular aspect of pseudoscience but at a particularly notorious disseminator of pseudoscience, the Associated Press, urging it to modify its journalistic practices and bring them into step with the Canons and Ethics of Journalism.

To illustrate the role of the AP in disseminating pseudoscience in America, let us turn to "The Columbus Poltergeist Case," by James Randi (*SI*, Spring 1985). On page 223 are these key words: "One photo . . . was published around the world as part of an Associated Press release. I had first become aware of the story from seeing the AP story in a Chattanooga newspaper."

The key point is obvious to anyone who knows the character and role of the AP in America today, and that is that the Columbus Poltergeist story would have died a few days after it was born in the pages of the Columbus, Ohio, *Dispatch*, had it not been picked up by an AP reporter and put out on the national wire. The same may be said of the other hundreds of pseudoscience stories that appear annually in American newspapers. The attention these stories receive would be negligible if a national wire service like AP did not give them national exposure. It is obvious, therefore, that CSICOP and the entire anti-pseudoscience movement should be taking a very close look at the Associated Press.

Nothing in this article should gainsay the valuable work done in reporting science and even in exposing pseudoscience by the professional science-writers on the staff of AP. The work of Paul Raeburn and of Bob Dvorchak is particularly notable in that respect. Unfortunately, such science writers are simply too few to report the many stories about science and pseudoscience that AP covers. To cite an example from the author's own experience, when he gave a paper to the American Physical Society on a topic in combustion that was of general interest, the reporter sent to cover the story had no science training worth mentioning, and his story said substantially nothing about the paper. It was devoted to an alleged hallway scuffle that Professor David W. Kraft, the deputy executive secretary of the American Physical Society, and others, deny ever occurred. In short, it was not a science story at all but an

account of a pseudo-event as spurious as AP's memorable 1961 account of the meeting of Dag Hammarskjöld and Moise-Tshombe that never occurred because Hammarskjöld had died in a plane crash before the meeting.

These comments will have served their purpose if they can help enhance the role of professional science-writers at AP by giving them a wider role both in direct reporting and as consultants to general reporters and in the administrative hierarchy of AP. Thus, when a story with potential science interest breaks, or when there is a complaint about the quality of coverage of a science story, writers and editors with science-writing background should be directly involved in making story assignments and in handling grievances.

AP is a nonprofit cooperative that has 1,500 full-time reporters in 132 bureaus in the United States, with 82 abroad, and an annual budget that exceeds $200 million a year. It serves 1,400 newspapers and 6,000 broadcasters. AP services were printed and broadcast abroad by more than 10,000 subscribers in the 1980s. So much for the quantity of what it delivers. What about quality?

AP publishes an annual, spiral-bound *Stylebook and Libel Manual*, with appendices on "Photo Captions" and on "Filing the Wire," for the guidance of its employees. The only clues to AP's values and standards are to be found in that manual, and so far as this reader has determined there is not one word of caution in it about pseudoscience, or for that matter about science. In a bibliography section there are two references to guide books on religious questions, together with a few references to standard compendia of information like dictionaries, gazetteers, and so on, and a considerable section of references to texts on good writing. But there is no reference to any general encyclopedia, nor a single reference to any of the standard texts on journalism or the Code of Ethics of the American Society of Newspaper Editors or any similar code.

To appreciate AP's record as a chronicler of the American scene would take us far beyond the modest goal of this column, which is to cover its role in the propagation of pseudoscience. But here we are fortunate to have a number of useful resources.

In 1940, the eminent journalist-scholar Curtis D. MacDougall published his valuable *Hoaxes;* and, in 1983, his much larger *Superstition and the Press* (611 pages). Looking through the index of the first book, AP ranks first in the number of references, with 12. The 1983 book does not index sources of journalistic pseudoscience, but a casual examination suffices to convince one that AP is the most frequently cited source. Thus, in the chapter on ghosts, there are eight references to AP stories on one page (151). In the book as a whole there are probably several hundred citations of pseudoscience articles from AP.

Another useful reference is Lawrence Kusche's *The Bermuda Triangle Solved*, published in 1975, which shows that the Bermuda Triangle hoax originated in a feature round-up by AP writer E. V. W. Jones in 1950.

The Associated Press warrants the closest attention of everyone in America who is concerned with the epidemic spread of pseudoscience in our media, and with the integrity, independence, and competence of our press. •

Lawrence Cranberg is a consulting physicist and president of the Austin Society to Oppose Pseudoscience.

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The Moon Was Full and Nothing Happened: A Review of Studies on the Moon and Human Behavior and Lunar Beliefs

I. W. Kelly, James Rotton, and Roger Culver

IT IS COMMONLY assumed that a full moon brings out the worst in people. Those who do research in this area invariably begin reports by reminding readers that "lunacy" and "lunatic" are derived from *luna,* the Latin word for moon. Although lunacy is an outdated concept, investigators have tried to link the phases of the moon to such behaviors as alcoholism, madness, epilepsy, somnambulism (moon walking), suicide, homicide, arson, and, of course, lycanthropy (werewolfism).

Arnold Lieber (1978), a Miami psychiatrist, used the term *lunar effect* when referring to supposed links between phases of the moon and behavior. Critics prefer the term *Transylvania effect* (Shapiro et al. 1970). As one might guess, those who defend the lunar hypothesis have objected to the latter "because it conjures up visions of werewolves and Draculas" (Garzino 1982, 399). In our view, however, neither term is appropriate, since the word *effect* implies that investigators can establish something more than a correlation in this area. Obviously, without having had a "control group" on a planet without a moon (perhaps a random sample of Venusians), researchers cannot show that a full moon exerts a causal influence on behavior.

In the first part of this article, we describe results from a meta-analysis of studies that examined relationships between phases of the moon and behavior (Rotton and Kelly 1985a). We also note several studies that appeared after we completed our meta-analysis. In the second part, we speculate about why lunar beliefs persist despite the absence of reliable linkages between phases of the moon and behavior.

Ivan Kelly is an associate professor of educational psychology at the University of Saskatchewan, Canada. James Rotton is an associate professor of psychology at Florida International University. Roger Culver is an astronomer at Colorado State University.

Research on Lunar Cycles and Behavior

Rotton and Kelly (1985a) combined data from 37 published and unpublished studies in a meta-analysis that had examined relationships between the moon's synod (4-phase) cycle and abnormal, deviant, and criminal behavior. Meta-analysis is a statistical procedure that combines results from empirical investigations. It allows reviewers to do three things: (1) estimate the overall or combined probability of results from different studies; (2) assess the size of relationships when results are averaged; and (3) identify factors that might help to explain why some studies have obtained apparently reliable results while others have not. This meta-analysis differed in one important respect from those that have been undertaken to resolve controversies in other areas: It included a reanalysis of results from previously published studies.

Of the 23 studies we checked, nearly one-half contained one or more statistical errors. Some of these were serious enough to prompt us to publish interim reports (Kelly and Rotton 1983; Rotton, Kelly, and Frey 1983) to correct errors that had crept into the literature. For example, we found that Lieber and Sherin (1972) had employed inappropriate and misleading statistical procedures in their often-cited study of homicides in Dade County, Florida. On the basis of binominal tests of significance, they claimed that a disproportionate number of homicides occurred during the 24-hour period before and after full moons. We found that this claim was based upon 48 tests of significance, which are not reported in their article. To make matters worse, their tests were not independent. For example, in one set of analyses they looked "at the three days before and after, three days before, three days after, two days before and after, two days before, two days after, one day before and after, one day before, one to two days after, and one to three days after full moon" (Rotton, Kelly, and Frey 1983, 111; Rotton and Kelly 1985c). Applying more conventional test procedures, it was found that homicides were evenly distributed across phases of the moon.

In another study, Templer, Veleber, and Brooner (1982) claimed that a disproportionate number of traffic accidents occurred during the night hours of the three-day periods of the new moon and the full moon. However, as Kelly and Rotton (1983) noted, a larger number of the full- and new-moon nights cited in the study fell on weekends. They suggested that apparent relationships might stem from the fact that more accidents occur on weekends than on weekdays. This suggestion was later confirmed by reanalysis of their data. Templer, Corgiat, and Brooner (1983) found that relationships vanished when they included controls for holidays, weekends, and months of the year. To their credit, they were willing to revise their original hypothesis: "It is likely that some, perhaps all, of the significant phase-behavior findings in the literature are a function of day of week or holiday or season artifact" (Templer et al. 1983, 994).

As these examples illustrate, a meta-analysis is no better than the studies on which it is based. In our meta-analysis, we took several steps to locate relevant articles and papers, including a computer search of the literature. Correcting for errors in original reports, we found that there was no consistent relationship between phases of the moon and acts usually described as lunatic. Taken as a whole, our results confirm the generally negative conclusions reached in prior reviews (Abell 1981; Cooke and Coles 1978; Campbell and Beets 1978; Kelly 1981). For every study that had found that people behave more strangely than usual when the moon is full, another had found that people's behavior was not affected.

Indeed, phases of the moon accounted for no more than 3/100 of 1 percent of the variance in activities usually termed *lunacy*. Estimating the percentage of unusual episodes that occurred during the quarter (25 percent) of the time when the moon is full, we found that about 25.7 percent of the episodes had occurred during full-moon periods. Of course there may be some who will claim that a difference of 0.7 percent is theoretically interesting. However, we are not impressed by a difference that would require 74,477 cases to attain significance in a conventional (i.e., chi-square) analysis.

Some might also object that we averaged over important differences when we combined data from different studies. To deal with this objection, we considered factors thought to mediate relationships between phases of the moon and behavior: sex of subject, type of lunar cycle (synodic vs. anomalistic or apogee-perigee), geographical features, publication practices, and type of lunacy (namely, mental hospital admissions, disturbed behavior in psychiatric settings, calls to crisis centers, homicides, and other criminal offenses). In only one of these subsidiary analyses did a difference approach significance. There was a slight (but not statistically significant) tendency for stronger relationships to appear in "pay" journals than refereed sources and unpublished theses.

Several additional studies have since come to our attention. In one of these, Russell and Dua (1983) examined relationships between phases of the moon and aggressive episodes during Western Hockey League games. They based their conclusions upon aggressive infractions recorded during the 1978-79 hockey season. After looking at several types of aggression, they concluded that "the present investigation offers no support for a lunar-aggression hypothesis" (p. 43). More recently, Russell and de Graaf (1986) replicated the earlier study on hockey infractions on a new season (1983-84) of the Western Hockey League. As in the earlier study they found no evidence of a relationship between hockey aggression and moon phase. In another study, MacMahon (1983) examined suicide data in the United States over a 7-year period. After plotting suicide rates by lunar phase (using a corrected 30-day cycle), she concluded that "deviations from the mean were small and present no obvious pattern" (p. 747). Likewise, Atlas (1984) uncovered no relationship between lunar phases

and violent episodes in Florida prisons.

Finally, Sanduleak (1985) examined relationships between lunar cycle and homicides in Cleveland, Ohio. His study is noteworthy, because Lieber and Sherin (1972) previously claimed that they had uncovered a reliable relationship between lunar cycles and homicides in this city. They based this conclusion on data between 1958 and 1970, whereas Sanduleak covered the period from 1971 through 1981 in his follow-up study. Sanduleak's results are aptly summarized by the title of his article: "The Moon Is Acquitted of Murder in Cleveland."

On the other hand, Davenhill and Johnson (1979) claimed to have detected a relationship between various personality variables as measured by the Eysenck Personality Inventory (EPI) and Cattell's 16 Personality Factors (PF) and changes in the lunar cycle. However, Startup and Russell (1985) criticized their research, pointing out that the Davenhill and Johnson study employed only a very small sample (12 males and 12 females) and only covered a short period of time (two lunar cycles). In addition, using 881 subjects over a two-year period and a more powerful statistical technique, Startup and Russell could replicate none of the findings obtained in the earlier study on the Eysenck Personality Questionnaire (EPQ, a revised form of the EPI) and only one with the 16 PF. However, the minuscule size of the relationship precludes any practical use, and the authors caution that it would be unwise to attach theoretical significance to this finding until it can be replicated by others.

Mirabile (1981) has claimed that he uncovered "a dramatic relationship between the expression of psychopathology and the lunar cycle" (p. 8). This claim, which was repeated in 1984, is based on an analysis of ratings made by an unspecified number of nurses over a two-year period (1976-1978). Nurses rated 156 psychotic and 104 nonpsychotic patients on 31 behavioral scales. It is not clear how often patients were rated, nor does Mirabile present any reliability data for his raters. Although more than 230,000 ratings were obtained, only 52,000 records were analyzed, owing to computer limitations. However, this claim was based upon inappropriate analyses and violations of a number of statistical assumptions.[1]

Belief in Lunar Effects

Rotton and Kelly (1985b) found that one-half (49.7%) of the students in a Florida university agreed that some people behave strangely when the moon is full. Similar levels of beliefs have been recorded for students at a Canadian university (Russell and Dua 1983) and in Singapore (Otis and Kou 1984). What accounts for belief in lunar effects? Although we have only begun to pursue this question, we suspect that belief in lunar effects can be traced to three factors. One of these can be termed *media effects.* Another is misconceptions about physical factors. The third, and in some ways the most interesting, is cognitive biases that lead individuals to look

to the moon when they witness unusual and apparently senseless types of behavior.

Media Effects

Newspapers, television programs, and radio shows favor individuals who claim that a full moon influences behavior. Arnold Lieber, one of those favoring the lunar hypothesis, has appeared on several talk-shows, including the nationally syndicated "In Search of . . ." As recently as November 8, 1984, his research was highlighted on ABC's "20/20." This supposedly objective report began with its host, Hugh Downs, suggesting that lunar effects provided evidence for astrology: "The moon's effects are legendary and, according to some, the most obvious example of astrology—that ancient belief that has in the past twenty years become big business."[2] Likewise, Mirabile's (1984) presentation at the Institute of Child Development was widely disseminated in newspapers throughout the United States. Finally, on August 27, 1984, Ann Landers answered a reader's question by telling him, "It's true . . . some people get loonier than others when the moon is full."

Newspapers, of course, are in the business of telling people what happened. "The moon was full, and nothing happened" may be accurate, but it is not a very interesting headline. In research on curiosity and information-seeking, it is something of a truism that "good news is no news" (Rotton, Heslin, and Blake 1983, 49). When reporters call us on the phone, they would probably be happier if we assure them by saying, "The streets are full of loonies when the moon is full." Unfortunately, when one scientist doesn't give them a quotation that can be turned into an interesting headline, they can always find an "expert" who will provide the quotation they need.

For a reporter interested in writing a story, it is not hard to find somebody who will talk about an uncle, say, who acted peculiarly when the moon was full. (Who doesn't have a peculiar uncle?) Those who defend the lunar hypothesis are not above resorting to case histories and personal anecdotes. For example, after failing to uncover a statistical relationship between the moon's apogee-perigee (far-near) cycle and behavior, Lieber and Sherin (1972) indicated that a "perusal of official narratives on individual incidents of homicides indicates that homicides occurring during these periods are often of a particularly bizarre or ruthless nature" (p. 105). As Meyers (1983, 120) has observed, "anecdotes are often more persuasive than factual data." To dramatize the supposed effects of the full moon, for example, "20/20" showed pictures of Miami police being called out to keep a young man from killing himself. The announcer's voiceover:

> Even before the moon has risen and the sun still commands the sky, it starts: A confused young man has a cocked pistol to his head. The special

response team is in place. If the subject points the gun at anyone else, he will be shot. . . . There are scenes like this somewhere every day, but in Dade County, Florida, at least, the special response team call-outs to incidents like this peaked at the time of the full moon—month after month.[3]

Misconceptions

Given the moon's obvious effects upon ocean tides, it is not surprising that scholars as well as students have jumped to the conclusion that it might also affect people's behavior. "If the moon can do that to oceans," our students say, "imagine what it can do to us!" In a similar vein, Lieber (1978) advocates a biological tide hypothesis. He contends (p. 115): "Because the [human] body [like the earth] is composed of 80 percent water and 20 percent 'land' or solids, it is reasonable to assume that gravity exerts a direct effect on the water mass of the body, just as it does on the water mass of the planet."

Lieber's analogy fails because it is too weak to warrant the inference he wants to draw. As Campbell (1982, 421) points out: "Only the *surface* of the earth has this 80:20 ratio . . . yet gravity involves attraction between three-dimensional structures (and their total masses, not just surface composition). Hence, the argument based on a similar water-solid ratio between earth and the human body is 'untenable.' " In addition, the moon causes tides only in unbounded bodies of water like the world's oceans (Abell 1981; Campbell 1982; Culver, Kelly, and Rotton 1986). Bounded bodies of water, such as land-locked lakes, unless they are very large (like the Great Lakes), are negligibly influenced. Clearly the water contained in the human body falls into the "bounded waters" category.

Even if we surmount these problems—for example, by assuming an idealized human who is uniformly covered by a layer of unbounded perspiration—gravitational mechanics still offers no support for the idea of biological tides. The expression for the tidal force F_{TIDE} to which an object of radius R will be subjected can be readily derived from the principles of classical mechanics: $F_{\text{TIDE}} = 2GRM/d^3$ where G is the universal gravitation constant, M is the mass of the tide-raising object, and d is the distance between the center of mass of two objects involved. A comparison of the tide-raising capabilities F_1 and F_2 of two separate objects on a given person can then be written as

$$\frac{F_1}{F_2} = \left(\frac{M_1}{M_2}\right)\left(\frac{d_2}{d_1}\right)^3,$$

where M_1 and M_2 are respective masses and d_1 and d_2 the respective distances of the tide-raising objects. As an example, suppose we wish to compare the tidal forces of a mother, the attending doctor, and the building

on a new-born child with that of the moon. If the hospital is located on the side of the earth's surface nearest the moon, then the moon's center of mass will be about 378,000 km distant. Assuming the mother's distance from the child while she holds it is 15 cm or so, then a 55 kg mother will exert

$$\left(\frac{55\text{kg}}{7.35 \times 10^{22}\text{kg}}\right)\left(\frac{3.78 \times 10^{8}\text{m}}{0.15\text{m}}\right)^{3} = 1.2 \times 10^{7}$$

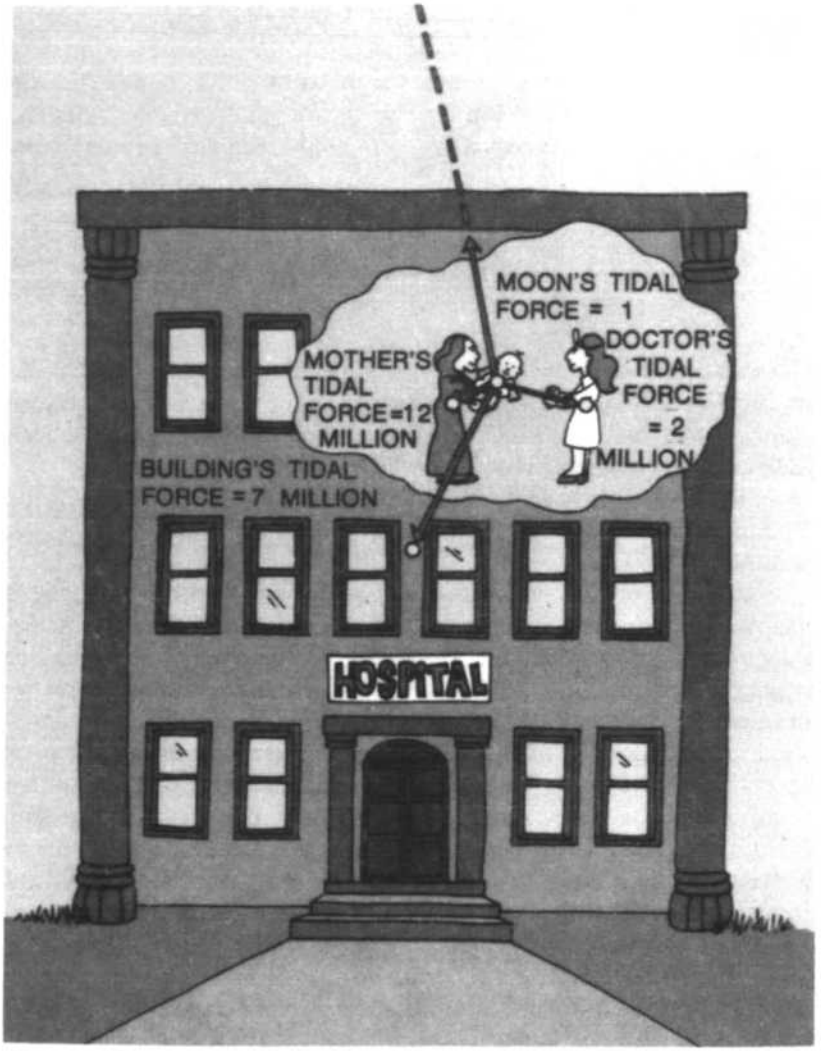
or 12 million times as much tidal force on her child as the moon. Calculations for the doctor and the fractional mass of the building contained within a radius equal to the child-building center of mass distance will yield similar results, which are shown in Figure 1. In fact, it can be easily shown that we would have far more tidal concerns from a downtown area with lots of large-mass buildings and crowded streets than from the sun or the moon.

The biological-tide hypothesis fails on a number of other counts. In our review (Rotton and Kelly 1985a) we found six studies that have looked at the distance of the moon from the earth and various types of behavior. Only one obtained significant results, and these were contrary to the biological-tide theory: More undesirable behavior occurred when the moon was *farthest* from the earth. In addition, Lieber argued that we would expect lunar-related behaviors to be more pronounced at the Equator than at more distant latitudes and to have an amplitude variation in keeping with the times of lunar perigee and apogee. We found no evidence for this contention in our review. Sanduleak (1985) did not obtain significant results when he examined relationships between homicidal assaults and a tidal index that was proportional to the magnitude of the combined lunar and solar tide action. Finally, Russell and de Graaf (1986) found no relationship between the distance of the moon from the earth and aggression in hockey games.

Although Lieber and Sherin (1972) originally attributed supposed correlations between phases of the moon and behavior to water imbalances, Lieber (1978), Katzeff (1981), and others have proposed competing hypotheses.

Garzino, for example, has speculated about ion effects:

> Because the moon modulates the earth's magnetic field, the entering ions follow a lunar cycle. During the full-moon phase, positive ions come down to earth *in great abundance*. But positive charged ions are now suspected by some scientists to create depression and irritability by increasing levels of serotonin in the nervous system. Serotonin is a mood-modifying chemical, a "downer." [Garzino 1982, 408, italics added. See also, Abel 1976; Katzeff 1981; Ossenkopp and Ossenkopp 1973.]


MOON'S TIDAL FORCE = 1
MOTHER'S TIDAL FORCE=12 MILLION
DOCTOR'S TIDAL FORCE = 2 MILLION
BUILDING'S TIDAL FORCE = 7 MILLION
HOSPITAL

Relative tidal forces exerted on a new-born babe by the moon, its mother, a doctor, and the hospital building. Figures are derived from the formula for the relative tide-raising capabilities of two objects, F_1 and F_2, with masses of m_1 and m_2, respectively: $F_1/F_2 = (m_1/m_2)\ (d_2/d_1)^3$. For example, the following estimate was obtained for a 55 kg mother standing 15 cm (.15 m) from her child on the earth surface nearest to the moon (mass = 7.35×10^{22}) when its distance is approximately 378,000 km: $F_1/F_2 = (55\ \text{kg}/7.35 \times 10^{22}\text{kg})\ (3.78 \times 10^8\text{m}/.15\text{m})^3$ or 1.2×10^7. That is, the mother's tidal force is 12 million times more than the moon's. Note: Figure adapted from R. Culver and P. Ianna, *The Gemini Syndrome* (1984, Prometheus), by permission of the authors and publisher.

Although early research on air ions could be criticized on a number of grounds—for example, use of shoddy equipment that produced ozone as well as air ions—more recent studies have demonstrated that people's moods are altered by very high levels of ionized air (Baron, Russell, and Arms 1985; Charry and Hawkinshire 1981). There is fairly compelling

evidence that the effects of negative ions are beneficial (e.g., improved mood and better performance on simple tasks), whereas the effects of positive ions appear to be less benign (Fisher, Bell, and Baum 1984). However, these effects depend upon personality factors, such as excitability, and are only found when individuals are exposed to very high concentrations of ions in a controlled (i.e., laboratory) setting.

Although positive ions are more prevalent when the moon is full, positive ion concentrations related to lunar variations are small when compared with those related to air-conditioning and air pollution (Campbell 1982). One is much more likely to feel the effects of positive air ions while working in an enclosed building. However, the question is not "Is there an ion effect?" It is, instead, "Are ion levels high enough when the moon is full to produce effects attributed to them?" The answer to this question appears to be no. Gilbert (1980) measured ion levels in a school for mentally retarded children. He found no evidence for the ion hypothesis. Indeed, in his study, he observed more disturbed behavior when the moon was new than when it was full.

Although ion effects appear to be mediated by serotonin, we have not been able to locate any study that has examined correlations between lunar cycles and serotonin levels. The absence of research on physiological processes is, in many ways, surprising. Some of those who favor the lunar hypothesis are physicians, such as Lieber and Mirabile, who often speculate about physiological processes. Why have they not obtained blood or urine samples to determine if there is, in fact, a lunar component in hormone levels? As Asimov (1985, 8) has observed, such evidence would be much more convincing than statistical analyses of homicide and crime rates: ". . . If these rhythms affect such things as our response to drugs or our tendency to violence or depression, then the rhythms must affect our internal workings. There must be a fourteen-day rise and fall in hormone production; or such a rise and fall in the activity of our immune system, or our cerebral drug receptors, or various aspects of our neurochemistry."

For several years now, investigators have been monitoring individuals' biochemical levels in hospitals and physiological laboratories in research aimed at answering other questions (e.g., Reinberg and Smolensky 1983). In most cases, they use spectral analysis to detect day-to-day and hour-to-hour changes in biological assays and electrodermal activities.[4] Given the large number of scientists involved in this research, it is hard to believe that a 14-day cycle could go undetected. Those who favor the lunar hypothesis often cite Brown's work on the activity patterns of oysters (Brown 1954) and hamsters (Brown and Park 1967). Some of these same authors have published books on biological rhythms (e.g., Garzino 1982). Strangely enough, they do not report anything resembling a 29-day cycle in human activity levels. Given the large number of studies done (in both the United States and West Germany) on the effects of social isolation (e.g., Luce 1971; Minors and Waterhouse 1981), it is surprising that none

of them have reported that subjects act restlessly, talk to themselves, or eat or drink more when the moon is full.

Cognitive Biases

A number of cognitive biases contribute to belief in lunar effects. One is selective perception: Individuals are more likely to notice events that support their beliefs than those that do not. Further, individuals are more likely to look for a cause when they notice unusual behavior. Because the moon is conspicuous and its absence is not, it will be an object commonly invoked to explain odd events and behavior. When something odd happens, what other object is so impressively in view as a full moon? However, in research that is now being done at Florida International University, we have found that students do no better than chance when they are asked to guess the moon's phase. As Sanduleak (1985, 6) observed, it does not seem likely that "even the most ardent proponent of a lunar effect could specify the phase of the moon. . . . I have tested audiences and found that only a very small percentage could." Social psychologists have found that most of us look to others when we have to make decisions (i.e., what they call "social reality"), and we often act like "cognitive misers"—that is, we look for simple solutions and base our decisions upon the first piece of information we receive (Fiske and Taylor 1983; Hansen 1980). Thus, we have to wonder how many individuals check to see if the moon is full when an unusual event occurs and somebody says, "Must be a full moon tonight."

Selective recall is another bias that contributes to belief in lunar effects. We often recall positive instances and forget negative ones (Nisbett and Ross 1980). Individuals may recall all the full-moon nights when something untoward happened while forgetting the uneventful full-moon nights and the many more *non*-full-moon nights when they witnessed unusual behavior.

Selective attention and recall contribute to illusory correlations (Rotton 1985a). Individuals find it hard to believe that events are random and unrelated, especially when they vary over time. For some, "Everything is related to everything else" is not just an ecological slogan; it is, instead, a principle that guides their thinking and leads them to interpret randomly distributed events as confirming their beliefs. As Meyers (1983, 129) has observed: "When we believe a correlation exists between two things, we are more likely to notice and recall confirming than disconfirming instances."

Illusory correlation is a special instance of a more general and confirmatory bias (Mahoney and DeMonbreun 1978; Snyder and Swann 1978; Watson and Johnson-Laird, 1972). Most of us seek data that support our beliefs, preconceptions, and hypotheses. It is commonly assumed that scientists are mainly interested in obtaining data that will support their theories and hypotheses. Unfortunately, as philosophers (e.g., Hempel 1966;

Salmon 1984) have suggested, thinking rarely advances when one adopts a confirmatory strategy. We learn a great deal more when our hypotheses are shown to be inadequate.

Yet another bias is selective exposure, which leads believers to watch TV shows and read books that confirm their beliefs. Although research on the selective-exposure hypothesis has produced mixed results, Otis (1979) found belief in one paranormal phenomenon (UFOs) predicts movie preferences. In her study, individuals standing in line to see *Close Encounters of the Third Kind* were more willing to endorse pro-UFO items than were individuals waiting to see other movies (specifically, *The Gauntlet* and *Saturday Night Fever*). There is evidence that beliefs in lunar effects comprise part of a constellation of belief in paranormal phenomena. Rotton and Kelly (1985b) found that students who scored lower on tests of logical ability, and those who believed in reincarnation, ESP, and astrology were more likely to endorse beliefs in lunar effects.

Any of these biases may act as a self-fulfilling prohecy, leading to actions that confirm people's beliefs (Russell and de Graaf 1986). For example, if police officers believe that a full moon causes criminal behavior, they might become more vigilant and make more arrests on full-moon than other nights (Frey, Rotton, and Barry 1979). In this regard, it is interesting to note that Rotton, Kelly, and Elortegui (1986) found that police officers were more likely to endorse items indicative of belief in lunar effects than a haphazard sample of pedestrians (the proverbial "man and woman on the street").

Conclusion

This article outlines the results of a meta-analysis of 37 studies and several more recent studies that examined lunar variables and mental behavior. Our review supports the view that there is no causal relationship between lunar phenomena and human behavior. We also speculate on why belief in such relationships is prevalent in our society. A lack of understanding of physics, psychological biases, and slanted media reporting are suggested as some possible reasons.

It is important to note that there are two hurdles to overcome before any findings on lunar variables and human behavior are deserving of public attention. The first hurdle is that *reliable* (i.e., replicable) findings need to be reported by independent investigators. The second hurdle is that the relationship should not be a trivial one. The lunar hypothesis fails on both counts.

Notes

1. Mirabile based his claim on a computer analysis, which he graciously attached to a letter sent to the first author on November 30, 1984. Mirabile

assigned patients to one of five levels of one factor in terms of their degree of motion sickness. In addition to this between-subject factor, his design consisted of "four seasons centered on the solstices and equinoxes and ten intervals in the lunar monthly cycle" (Mirabile 1981, 7). As he correctly notes, this yields 5 (motion sickness) × 4 (seasons) × 10 (lunar cycles) or 200 cells for comparison. So far, so good. What we have here is a traditional split-plot design. Unfortunately, ignoring the distinction between-group and within-subject factors, Mirabile concluded that each cell in his design contained 156 observations for the psychotic group of patients. As a consequence, the error term in his design was an amalgamation of heterogenous sources of variance (i.e., subjects within groups, lunar cycle × subject within groups, season × subject within groups, etc.). Even if we assume this type of pooling is appropriate, we cannot ignore the fact that Mirabile's *F* ratio for lunar cycles was based on 9 and *31,000 degrees of freedom!* With so many degrees of freedom, we would be surprised if lunar cycles had not attained "significance." To take another example, Mirabile attempted to interpret a three-way interaction after obtaining a "significant" *F* of 1.29. With 128 and 31,000 degrees of freedom, his three-way interaction would probably have attained significance if one of the nurses in his study had yawned.

Even if one ignores those statistical errors, lunar cycles accounted for a very small percentage of the variance in paranoid behavior. Mirable (1981) obtained an *F* of 10.2442 for the factor of lunar cycles in his design. Cohen's (1977) "effect size index" (*f*) for this *F*-ratio, with 9 (df_n) and 31,000 (df_e) degrees of freedom is $(df_n F/df_e)^{1/2} = 9(10.2442)/31000)^{1/2}$, or 0.002741. In other words, his lunar factor accounted for a little more than 0.296 of one percent of the variance in ratings of paranoid behavior, since $eta^2 = f^2/(1+f^2) = 0.002963$. We will confess to being gratified by the fact that this figure is close to our previously stated estimate of 0.3 of one percent for relationships in this area.

2. These quotes were transcribed from a cassette recording of the November 8, 1984, broadcast.

3. See note 2.

4. Any complex curve can be described in terms of a number of pure sine-waves that differ in amplitude, frequency (cycles per unit time), and initial phase or starting time. Spectral analysis is simply a mathematical procedure that allows an investigator to describe a wave in terms of pure waves. As Rotton (1985b) has noted, it is ideally suited for uncovering "hidden periodicities" in behavior.

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Psychic Studies: The Soviet Dilemma

The tug of war about parapsychology continues in the USSR, as elsewhere. Soviet psi research is subject to a variety of influences and should be neither slighted nor overdramatized.

Martin Ebon

SOVIET STUDIES in parapsychology during the past quarter of a century reflect much of the dilemma that faces scientists in the USSR in other fields, notably in psychology and sociology. It is never useful to see Soviet efforts as those of a totally monolithic society; many ideological and administrative forces tend to influence the selection of subject matter, experimental approaches, and, in the end, who does what, who takes the credit, and, who takes the blame.

Soviet interest in modern parapsychology was initially aroused when a French popular science magazine, *Science et Vie,* published an article in its February 1960 issue with the title "The Secret of the Nautilus." The author of the article, Gérald Messadié, asserted in considerable detail that the U.S. nuclear submarine *Nautilus* had been in telepathic contact with the naval base at Friendship, Maryland, and that mental shore-to-ship signals had been 70 percent successful.

Some two decades later I visited Messadié in his magazine's Paris office, and he freely admitted that as a young and overenthusiastic writer he had fallen for a hoax when he wrote the Nautilus article. The material for this story was given him by the late Jacques Bergier, a somewhat mysterious man born in Odessa, who claimed several early intelligence connections. Just why he fed Messadié this doubtful, but cleverly selected,

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information remains a mystery. In any event, Soviet parapsychologists seized on the Nautilus report and said, in effect, "Look what these Americans are doing!"

A quarter-century passed, and the problem of communicating with submerged submarines remains. Neither the U.S. Navy nor the Russians have found telepathy sufficiently reliable to do away with projects for contacting submarines by such means as ELF (extreme low frequency) transmissions. Telepathy, if it could be harnessed and directed properly, would obviously be a great deal cheaper than alternative projects like stringing vast underground antennae in northern Michigan in the face of vigorous local opposition.

The question of applying extrasensory perception to specific military or nonmilitary uses focuses on means of controlling a seemingly spontaneous and elusive faculty. Laboratory experiments today seek to create settings and emotions that may permit ESP to emerge and function. In studying Soviet psychic research we encounter a good deal more than the usual Soviet secrecy. Researchers in the field are not only subject to rivalries, zig-zags in policies, and other insecurities common to academic and government work—they also suffer the additional handicap of tackling subject matters that arouse enthusiasm, antagonism, and mixed emotions that have nothing to do with purely empirical considerations.

In the *Journal of the American Society for Psychical Research* for April 1984, Charles Tart of the University of California at Davis deals with the topic "Acknowledging and Dealing with the Fear of Psi." He states that such unacknowledged fear is "widespread" among parapsycholo-

gists, and we need not doubt that it also exists among opponents of parapsychological studies. In the Soviet Union, researchers need not only fear psychic faculties and happenings as such, but must also run the risk that ideological hard-liners can threaten their careers, as well as their academic and social standing.

In the late 1950s and early 1960s, Prof. Leonid Vasiliev, head of the Physiology Department of Leningrad University, tried to remove ideological barriers to the study of ESP. Traditionally, Marxism had lumped psychic studies with mysticism and religion as "idealistic," in contrast to the "materialistic" concepts that it favored. Vasiliev, a closet parapsychologist during the Stalin years, published two books—*Suggestions at a Distance* and *Experiments in Mental Suggestions*, both in 1962—that dealt with psychic research before the Stalin period and throughout the world during the first decades of the century.

Vasiliev suggested that it would be a blow to "idealism" if psychic phenomena could be examined in purely physical and physiological terms; if they were found to have a material basis, this finding would, as it were, pull the rug out from religio-spiritual musings about telepathy, clairvoyance, premonitions, and mind-over-matter. One member of the Leningrad group, Prof. V. P. Tugarinov, urged in the university's bulletin in 1964 that scientists studying telepathy should "distinguish reality from preconceived ideas" and try to "explain the energetic and physiological basis" of telepathy. Tugarinov, then head of the Philosophy Department of Leningrad University, also wrote:

> The success of investigations depends upon the unprejudiced cooperation of physicists, physiologists and engineers. Whenever this topic is put up for discussion one hears again and again, "I don't believe in it" or "I do believe in it." But is this thing, which we are trying to put on a solid foundation, a matter of belief? Above all, the question is to examine by experimental scientific methods whether these phenomena exist or not. Should we find even fragments of them confirmed, then we ought to devote all our efforts to clarifying the rational basis of these phenomena.

Vasiliev, who died in 1966, provided the ideological groundwork for psychic studies in the Soviet Union. We must remember that it was the Khrushchev Decade, from 1954 to 1964, that permitted parapsychology to come to the fore and made it possible for American and other Western researchers to visit their parapsychological colleagues in such centers as Moscow, Leningrad, and Alma Ata. Soviet scientists also traveled abroad. But a parapsychological journal that Vasiliev had hoped to issue never came into being. Instead, popular newspapers and magazines, and periodicals in a variety of disciplines, such as education and ophthalmology, carried papers of parapsychological significance.

Soviet researchers have the dual need of being both scientifically and

ideologically respectable. In order to put some distance between themselves and their Western colleagues, they developed a vocabulary of their own. Thus, "telepathy" became "bio-communication," and "dowsing" was labeled "the bio-physical effect." Parapsychologists in Czechoslovakia coined the word "psychotronics," which specifically refers to what Western researchers call "psychokinesis" and what the public knows as "mind over matter." Psychotronics has become something of a catch-all. International congresses on psychotronic research have taken place in many parts of the world, and Soviet researchers either participate or have their papers read in absentia.

Such Soviet papers are not revelatory of sustained coordinated psychic research. Given the nature of Soviet society and the isolation of scientific disciplines in the USSR, this is not surprising. More troubling is the fact that experiments reported by some Soviet researchers are at times, presented in such a way that they cannot be replicated. Often essential segments are missing in published versions; among explanations given was that paper shortages prevented publication of complete accounts of experiments.

When reports of psychic tests appear in popular papers or magazines, it is often difficult to distinguish between experimental details and journalistic dramatizations. Among the more imaginative tests are telepathy—or bio-communication—experiments over long distances. Among the most colorful and controversial were those between two telepathists, Yuri Kamensky, a biophysicist, and Karl Nikolayev, an actor. As in the case of a transmission between shore and submarine, where a short code-word might be sufficient to alert the vessel to surface and receive more detailed instruction, one or several of the tests used Karl as a "transmitter" and Yuri as a "receiver." Keeping in mind that strong emotions are claimed to be instrumental in creating telepathic impulses, Karl was instructed to use hostile thoughts toward Yuri, even going through the motions of beating him up, in order to transmit dot-and-dash code signals.

But this experiment, which was said to have been successful, was reported in the newspaper *Moskovskaya Pravda*, not in a scientific journal. And while we are told that the "receiver's" brain and heart were monitored during these experiments, no details of these procedures are available. Amplifying telepathy by such emotions as hate and fear and by the use of drugs and electronic stimulants appears to be part of the Soviet scientific arsenal in this field.

We have, however, had a good deal of information from former Soviet residents who have come to Western countries in recent years; some of them were active in parapsychology, and some worked in the former Laboratory of Bio-Communication of the Popov Institute in Moscow, which organized the long-distance telepathy experiments. This laboratory, which had been the central point of parapsychological experiments in the Soviet Union for several years, was quietly dissolved in 1975. Apparently

some staff members were considered too "idealistic" in their approach to research. In 1978, the unit was revived under the name Laboratory of Bio-Electronics, with parallel centers in other cities, apparently under tighter military and secret-service control.

So much is being written about the role of secret services these days, including the Soviet KGB, that one is almost reluctant to use such initials for fear of sensationalism. But the KGB *has* played a role in the development of parapsychology studies in the Soviet Union, just as changes in the Soviet leadership, after the removal of Nikita Khrushchev in 1964, have influenced official attitudes toward such research. On the most personal level, the so-called bio-energetic treatments given by the Georgian healer Dzhuna Davitashvili to the then ailing Leonid Brezhnev (*SI*, Winter 1980-81, p. 6) appear to have helped the standing of various healing techniques in the USSR. The emergence of Yuri Andropov, later the Soviet chief of state, as head of the KGB in 1967, was followed by a clamp-down on relatively free-wheeling parapsychologists, coupled by greater KGB involvement in experiments at a variety of institutes.

None of the available information is clear-cut. None of it gives us anything like a full picture of Soviet involvement in psychic studies, whether on a purely exploratory level or in the area of applied studies, whether for civilian or military purposes. There has been much speculation about the extent of Soviet expenditure in psychic studies. In my opinion, such speculation is futile; very likely there is no one in the Soviet Union itself who has a full picture of the funds devoted to work at the institutes, which are scattered from Novosibirsk to Leningrad, from Alma Ata to Kiev.

Nor is it at all clear which segment of the Soviet establishment has achieved priority in conducting psychic experiments. In September 1973, the prestigious Moscow journal *Questions of Philosophy* published the paper, "Papapsychology: Fiction or Reality?" signed by four prominent Soviet psychologists. It surveyed international studies in the field and concluded that, in the USSR, such research should be taken out of the hands of self-styled parapsychologists. The authors clearly saw such people as mere amateurs compared with professional psychologists. They said that "the attention of serious scientific organizations" should be directed toward "unanswered questions of the human psyche."

One nonacademic parapsychologist, the very active Edward Naumov, was sent to a labor camp in 1974 and released after a year of imprisonment. He has, however, been able to continue lecturing in his chosen field, mainly reporting on developments on the international parapsychological scene. On occasion he has been arrested but quickly freed; in such instances, officers of the Ministry of Interior and of the KGB seem to disagree about whether or not Naumov's lectures are officially acceptable.

Yet another area of difficulty has been the motivation of Soviet officials in permitting foreign visitors access to certain experiments and experi-

Will the Real Jack Anderson Please Sit Down

Readers of Jack Anderson's syndicated column have been subjected to a series of contradictory stilmuli that would have delighted the late Prof. Ivan Petrovich Pavlov. Anderson, whose home-ground is the comic pages of the *Washington Post* (he was exiled from the Op-Ed page years ago) has alternately boosted and ridiculed governmental research in parapsychology, in both the United States and the Soviet Union.

The valiant few who keep track of this sort of thing, and I am one of them, note that Anderson devoted his column to this topic on February 5, March 30, and June 8, 1981, and on July 17, July 31, and August 12, 1985. The columnist's approach ranged from sly giggles over U.S. "voodoo warfare" to solemn declarations that "the Soviets are outspending us by at least 70-to-1 in occult research." Last August, Anderson wrote that a "top" psychic had "described the Semipalatinsk nuclear facility in Soviet Central Asia in detail that was only confirmed afterward by satellite spy photos." Still he suggested "all this ESP-ionage" might simply be just another boondoggle.

One gets the image of the columnist, hyper-competitive among his kind, rushing frantically from one exposé extreme to another. Will the real Jack Anderson please sit down!

—*Martin Ebon*

menters but not to others. For several years visiting parapsychologists would arrive in Moscow, see local researchers, and then, as likely as not, go to Leningrad to see the psychic Nina Kulagina engage in what appeared to be remarkable demonstrations of psychokinesis or psychotronics. She moved small items, apparently by mind power, even when they were encased in plastic. However, no Western parapsychologist ever succeeded in setting up and carrying out a fully controlled and satisfactorily monitored experiment.

As the experiments in remote viewing undertaken by Harold Puthoff at SRI International in Menlo Park, California, have emerged as the only documented U.S. government-supported research, it long seemed likely that Soviet scientists would at least try to duplicate this work, and possibly seek to better the results. However, no published material emerged from the Soviet Union to confirm this. Similarly, Soviet studies have in the past dealt with influencing the human mind at a distance by hypnosis, or

possibly through the use of some electronic device capable of having an impact on brain action or mood. More recently, when former SRI associate Russell Targ visited the Soviet Union, he was told that remote viewing was being studied in Soviet Armenia. Consistent Soviet interest in mind-changes and mind-control makes it likely that distance experiments have indeed taken place and are continuing.

This puts us in the awkward position of doubting the value of information we do receive and attributing importance to work that remains unreported. In other words, one is tempted to operate under the maxim "Doubt what you are told; believe what remains unsaid!" Such applied cynicism is often justified, but it, too, has its limits. Now that studies of remote viewing have been acknowledged in the USSR, are we to assume that reports about it are to be treated as "disinformation"? Not really. More likely, Soviet researchers have come to an impasse in their studies and would like to explore new avenues.

With so much uncertainty in recording and analyzing Soviet work in parapsychology over a period of more than two decades, it is exceedingly difficult to come to definitive answers about how well the Soviets are doing. That they have continued their work for such a long time, and under adverse and changing conditions, suggests at the very least that they remain encouraged.

Why do the Russians persist in this work? Why did they get into it in the first place? The parallel questions are, of course, why is there such a persistent interest in psychic studies in the West generally, and in the United States in particular? And why, after years of direct suppression during the Mao era in China, have some Chinese scholars, notably in biology and medicine, now ventured deeply into this previously forbidden territory?

One Russian-born specialist, Prof. Nikolai Khokhlov, now at the Department of Psychology at San Bernardino State College, told a meeting of the Foundation for Research in the Nature of Man that "the very nature of the Russian national character" involves "traits which make a Russian specifically sensitive to matters relative to the mystical side of the human psyche and lead him to a restless search for the philosophical meaning of human existence." Marxism has failed to meet the religio-mystical yearnings of the Soviet masses, be they Russian or non-Russian in ethnic tradition. And Khokhlov noted that there continues "a search for the mysterious, the far-removed world beyond the senses" that lies "beyond materialism."

Marxism has, in the past, been able to gain supporters precisely because it seemed to meet such needs for a mystical-utopian experience. Lenin's embalmed body in Moscow's Red Square is a symbol directly in line with the public's response to religious relics. A visit to Lenin's tomb is in the tradition of religious pilgrimages to a shrine. Lenin's constant presence throughout the Soviet Union in larger-than-life statues, in busts,

medals, and paintings, follows the Russian tradition of icons that may look stern or benign, but always inspirational. Lenin's writings are, of course, as ever-present as any scripture, and they are cited as such in speeches, articles, books, and pamphlets.

But this is clearly not enough. The statues have become part of the landscape; the writings are largely unread. Small wonder that, during the Mao years, a leading Peking journal accused the Soviet Union—and the United States—of introducing parapsychology in order to detract what Mao's China saw as the distraught masses within the "two superpowers." Russia and America were attacked for using parapsychology as "religion without the Cross"—in other words, in the best Marxist vernacular, as a new opium for the masses.

The reverse is probably true, at least in the Soviet Union. The government, or some people in it, regard public and scholarly fascination with psychic phenomena as a threat to "materialism," and to this day it is risky to ignore such doctrinaire matters in the USSR. But the general public in the USSR seeks diversion in such things as yoga, at least when it is labeled simply as some form of exercise—just as meditation is practiced as long as it bears the label of "autogenic training."

There is also the attraction of the unknown, which has been with us through recorded history, as far back as cuneiform tablets will take us. In the United States, the decade from 1965 to 1975 brought wide interest in psychic phenomena, but it has been on the downgrade ever since.

The underlying fascination has, however, only shifted. Public interest has moved toward novels and motion pictures that depict the unknown within the tradition of the ghost story, the horror story, the science-fiction version of supernatural powers of destruction. Movies like *Rosemary's Baby* and *The Exorcist,* which contributed to the Occult Decade, have been overtaken by wild tales of terror.

No doubt infantile fascination with horror in fairy tales and adolescent addiction to horror movies can provide grist for a dozen mills of psychological analysis. In this country, certainly, the general public has lost interest in the more sedate approaches to the paranormal, and now we have whole sections of "occult fiction" in some bookstores.

It is the accepted thing, of course, to draw a firm line between the public's tastes and the trends in academic government research. But when we examine the various levels of interest in the mass media and among the opinion-making élite, we do discover common denominators. The unconscious drives, fears, and fascinations of decision-makers are likely to make themselves felt.

This is just as true for individuals in the Soviet Union as it is for people elsewhere. The veneer of Marxist materialism should not distract us from the fact that religio-ethnic traditions within Russia and the other Soviet republics persist in many levels of society. If the rumors that reach us from the Soviet Union are correct, experiments have been designed and

undertaken that are based on the traditions of Eastern Shamanism; healing of the type undertaken by Miss Davitashvili shows close kinship with the laying-on-of-hands that is practiced within religious settings elsewhere.

I have long been interested in the experiences, often early in life, of people who are attracted or repelled by psychic phenomena. Rarely can one obtain detailed and totally candid accounts. Such encounters are often highly subjective—and therefore utterly non-"scientific"—and people tend to avoid talking about them and try to make light of them. Surveys show that those who accept the concept that psychic phenomena do occur have, for the most part, experienced them themselves.

For all I know, some or all of these personal experiences are based on malobservation or hallucination; but that does not make them any less real to those who experience them. It may be frightening or thrilling to encounter an apparition, to experience a precognitive dream, or to run through a series of striking coincidences. People are confused and scared by such experiences, and they don't accept them all that easily within our cultural framework. Often enough, they wonder whether they are going crazy. Pathology, of course, is very often an exaggeration of the normal. A phobia can be seen as normal fear or caution—crossing the street, let's day—multiplied to a degree that makes day-to-day functioning impossible.

People who feel that they are being spied upon by telepathy, or directed by hypnosis at a distance, may be suffering from a form of paranoia. This does not mean that telepathy is, at all times, a product of the imagination; it certainly does not eliminate the reality of hypnosis.

An aura of the magical continues to envelop psychic phenomena and parapsychological research, no matter whether we apply quantitative or qualitative methods, or whether we—or the Russians—tinker with the vocabulary to make it more technical-sounding. But then medicine and chemistry are fruits on the tree of alchemy. Magic potions are being advertised on television day in and day out. The tug of war about parapsychology continues in the Soviet Union, just as it does here and in other countries. We ought to continue to observe these research trends, to take note of them, and neither to slight nor to dramatize them unduly. •

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The Psychopathology of Fringe Medicine

How does fringe medicine work when it does work? Why do so many people believe it does when it doesn't?

Karl Sabbagh

FRINGE MEDICINE shares much common ground with the paranormal. First, there is often a *desire to believe* in the therapies and the practitioners of fringe medicine, just as there is a *desire to believe* in the paranormal. Second, it is often difficult to tell the difference between a fringe therapy and a paranormal claim. Astrology, palmistry, phrenology, and psychic surgery all crop up in the guise of alternative therapies and display themselves side by side with osteopathy, acupuncture, and homeopathy, all asking to be believed in for reasons that have nothing to do with the results of any investigations.

But why *do* so many people believe in the effectiveness of fringe medicine? In discussing this question, we will be exploring the scientific disciplines of psychology, physiology, and anthropology—and gullibility.

The question can be broken down into two further elements: How does fringe medicine work when it does work? And why do so many people believe it does when it doesn't?

I have used the word *psychopathology* in the title because in *my* dictionary, one of the meanings of the word is "a study of mental functions under conditions brought about by disorder or disease." Some of my analysis deals with people's mental functions when they are seeking help

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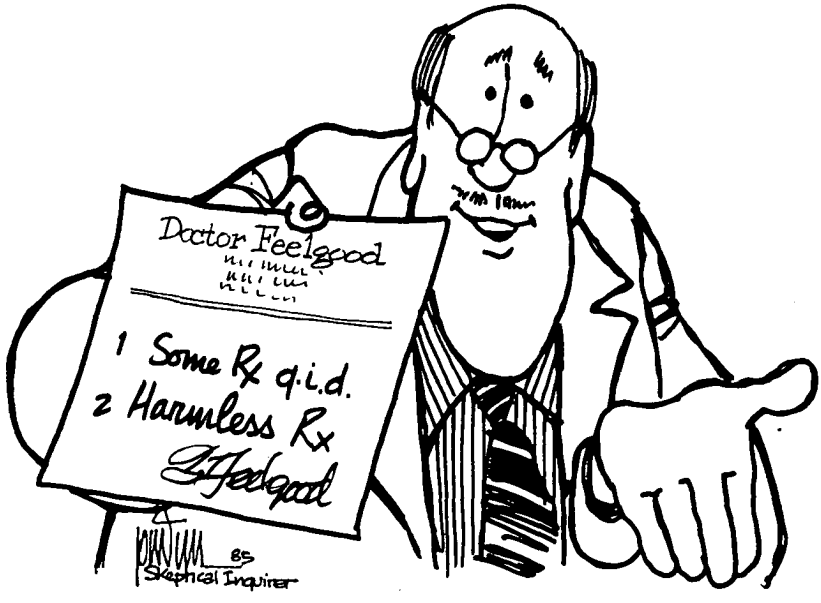
for disorder or disease; and I believe that they think pathologically, as I will suggest later.

When I say fringe medicine sometimes works, I mean that every day people are feeling better after some fringe treatment or other. The question is, Why do they feel better? Is it a genuine improvement in their physical condition due to the specific effect of the treatment, as practitioners claim? Or is it for much more complex reasons that have to do with human psychology, perceptions of probability theory, the physiological links between mind and body, and the natural variability of disease? In looking at fringe medicine I will be suggesting that, when it works, it works for none of the reasons given by fringe practitioners themselves.

Some of the most dramatic and convincing examples of "cures" by fringe medicine come about when people with undeniably serious physical illness get better while undergoing some fringe therapy. What other explanation could there be, particularly if conventional medicine appears to be only of limited success?

A few years ago, an American cancer-researcher presented a convincing analysis of this by no means rare event. Emil J. Freireich, of the M. D. Anderson Hospital in Houston, Texas, offers what he calls the "Freireich Experimental Plan," which enables anyone to set himself up as a therapist and is "guaranteed to produce beneficial results." Although it's a tongue-in-cheek analysis, I think Freireich's plan tells us a lot about how an impression of effectiveness can come about in fringe medicine.



There are two essential requirements. The first is a *treatment* of some sort; it doesn't matter what. It could be some new form of psychotherapy or a really impressive physical procedure, some type of rubbing or hand-waving or a mechanical device of some sort, or the administration of some substance, a drug, a plant, or a chemical. The second requirement is that whatever treatment you choose must be absolutely harmless.

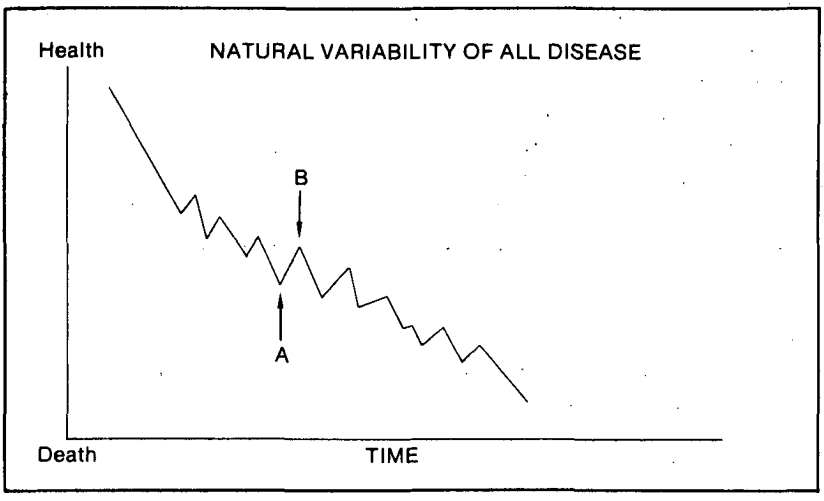


FIGURE 1. When to treat (A) and when not to treat (B).

Starting from these two conditions, Freireich shows how almost any fringe technique can lead to a situation where any outcome can be interpreted as confirming its success. The key factor in his analysis is the natural variability of all disease. Figure 1 shows the typical course of a serious illness. Freireich points out that every disease, acute or chronic, has important periods of remission, the ups on the graph. At those times, a patient feels better than he has done for some time; and in fact he actually *is* physically better, by all objective measurements. This is true even if there is an inexorable trend downward, and it is even truer, of course, in the case of diseases that are not potentially fatal. "There is no disease I know," says Freireich, "where inevitable and continuous progression is the universal characteristic." On the basis of these observations, Freireich has devised a schedule for the budding fringe-therapist. The first rule is that treatment should only be applied to a patient after a period when he has been getting progressively worse. If you apply the treatment during one of the *ups* and the patient continues to improve, he can always say he would have got better anyway. If treatment is applied when the patient is getting *worse*, four possible things could happen. First, the patient could start to improve. Natural variability will ensure that this

possibility is always present. If it happens, it immediately "proves" that the treatment is effective. The second thing that could happen is that the disease remains stable. This *also* "proves" that the treatment is working, because it has arrested the disease. What is needed now, says Freireich, is the application of the treatment at a higher dose, or for a longer period. This will of course cause no harm, because the treatment is harmless. A third possibility is that the patient continues to get worse. However, the practitioner need not be at all put out by this, even if the patient is, because this can be taken to mean that the dosage was inadequate and must be stepped up, or that the treatment hasn't been taken long enough. The fourth, and saddest, outcome is that the patient dies. Even in this case, the good fringe-practitioner need not accept defeat. The death is an indication that the treatment was delayed too long and applied too late—"if only he'd come to me sooner." This also means that the case need not be included in the overall analysis of the results.

So far, so good. If you are a therapist following the Freireich Experimental Plan and have applied it to a number of patients, you have already had *some success*—the ones who started to get better. But you have still got a number of patients who stayed the same or continued to get worse, whom you are continuing to treat.

It is now time to move on to phase 2. Here you have to treat the patients who remain in the same way as you treated the patients in phase 1—applying your therapy *only when they have got worse.* There will be some more successes, and there will be some patients who need to continue with more intensive treatment. As you apply these procedures stage by stage, you will end up with two groups of patients—the ones who have shown objective improvement (apparently thanks to your treatment) and those who are dead, who can be excluded from the study because, in spite of all your efforts, their late arrival meant that they were beyond saving.

There's a third and even more ingenious stage that helps to confirm the effectiveness of the treatment among those patients who are showing improvement. Once the patient improves you *must reduce* the dose. This then produces two possible outcomes: (1) The patient continues to show improvement, which proves how effective the treatment was. (2) The patient stabilizes and stops improving or even starts to get worse again. This is *also* proof of the effectiveness of the treatment, because reducing the treatment has obviously made the disease active again, "proving" that the treatment was responsible for the earlier improvement. In fact, it is a well-known principle of homeopathy that when you apply a remedy the patient will often get worse and that this is a proof that the remedy is just right for the condition and the patient you are treating.

There is actually a serious purpose behind Freireich's analysis. First, a lot of it rings true as an account of relationships between patients, doctors, and their diseases. But it also highlights a point that is an important component in the way we perceive treatment of illness—the tendency in all

of us to ascribe cause and effect where none exists. There is no doubt that much disease *does* behave in the way Freireich describes, and there's no doubt in my mind that natural variability leads to fringe medicine getting credit for outcomes that would have occurred anyway. To anyone who has read or observed fringe medicine at work, the Freireich Experimental Plan seems to ring very true. Freireich's analysis applies to conditions where there's an *impression* of cause and effect between treatment and disease but where in fact the treatment is having no effect at all.

There's another group of conditions that seem to benefit from fringe medicine; and this is not really surprising, because they probably do not exist at all as clinical entities. These are the half-perceived discomforts or anxieties that come and go in all of us for all sorts of reasons and that fringe practitioners elevate to the status of a disease by labeling them. Here's a list of illnesses taken from a recent compendium of fringe remedies: diffuse aches, dandruff, loss of appetite, insomnia, apoplexy, dislike of being alone, "doormat tendency," pins and needles, numbness sensations, lassitude, neuromuscular difficulties, a tendency to lymphatic stagnation and weakness in the lymphatic cleansing system, congestion, sluggish liver, constipation, hiccups; and, there is one other group of patients who can be cured by fringe medicine, "those who feel they have set blocks on their own free emotional expression and want to go back and evaluate their reaction to those blocks," whatever that means.

If we have one of these "illnesses" and if we take a homeopathic pill one day and feel less sluggish or apoplectic the next, we are ready to see cause and effect where none exists. It seems to be the case that, if B follows A, it is difficult for most people not to believe that A and B are linked in some way. ("Every time I wash the car, it rains shortly afterwards," or "The new Bishop of Durham was installed in York Minster and the following day lightning struck.") These beliefs are strengthened when we have no objective standard to assess likelihood. In the case of a particular disease, we do not know how likely it is that someone undergoing treatment would have got better anyway, for example. And, indeed, it is often difficult for anyone to make that calculation. The course of an individual illness depends on too many factors.

All we can really say, like Emil Freireich, is that people often get better or go into remission for no discernible reason when they have *not* been given acupuncture or homeopathic remedies. Most of us are just not familiar enough with probability figures or the natural history of disease to make the sort of informed judgments that apply in the assessment of therapeutic effectiveness. We are often in the same state of ignorance about physiology as my young daughter was about meteorology when she looked out of the window one windy day and said: "Those trees are certainly pushing the wind about."

We all have a tendency to look for patterns in the world and make links where none exist. If your constipation disappears shortly after some-

one has inserted a needle with great ceremony in a very specific part of your earlobe, few of us would doubt that one causes the other, even though constipation around the world gets better every hour with little or no insertion of needles into ears.

In fact, in addition to nondiseases, there are other situations where a range of conditions does genuinely benefit from contact with some form of fringe medicine. These are conditions that have a known psychosomatic component. It is interesting how the links between mind and body have been monopolized by fringe practitioners as if the subject of psychosomatic medicine had never existed. In fact, of course, the past 30 years of medical research have seen a very respectable body of research work into the links between psychological events and physical illness. But, although many fringe therapies place great emphasis on the indissoluble link between mind and body, they fail to draw the obvious conclusion—that many of the beneficial results of specific fringe therapies come about because of the belief in the practitioner, rather than because of any particular manipulation, preparation, or device.

Many fringe treatments include the relief of headache, backache, and general pain among the indications of their success, and they undoubtedly "work" in the sense mentioned earlier. In other words, people feel better; the pain is diminished or entirely absent after treatment. The important question is: Why? If your headache goes away after your toes have been manipulated by a warm friendly therapist who exhibits all the signs of caring and love that we all need so much these days, is it the manipulation that removes the headache or some other factor; such as belief in the therapist? If an iridologist looks deeply into your eyes and gives you a firm diagnosis of "lymphatic stagnation and weaknesses in the lymphatic cleansing system," it would be churlish of you and your body not to respond by feeling better afterward. But Occam's Razor leads us toward parsimony in the search for explanations in the world around us.

We have to choose an explanation for the following situation. A remarkably similar list of conditions all improve after diagnosis and treatment with a wide range of fringe therapies. There are two possible explanations. One is that *each therapy* is specifically responsible for the improvement in the patient treated. Mrs. A's headache improved because her ear was pricked; Mr. B's backache improved because he took a homeopathic remedy; Miss C's digestion improved because the energy zone in her navel was manipulated; and so on.

But there is a second possible explanation. *All* of these therapies could be effective because they all act in the same way. They create the same psychosomatic improvement through belief in the therapy or the therapist, enhanced by the full panoply of unusual devices and charts, pseudoscientific terminology, and single-minded concern shown by the therapist for the patient. To take one of the most common medical problems, headaches, there is strong evidence that 90 percent of the headaches

presented to doctors are tension headaches, probably linked to some mental state of anxiety or depression. This does not, of course, make them any the less painful or any the less physical. But if they *arise* for psychological reasons, is it not likely that they go away for psychological reasons? To summarize this particular point, I am suggesting that in this situation illness is cured *either* by foot manipulation *or* by belief in foot manipulation, *either* by homeopathy *or* by belief in homeopathy, but not by both. The belief in the therapy and the therapist, enhanced by the time and the close attention given by the therapist, leads to an effect on the mind that in turn produces an effect on the body, in a range of conditions that have been shown in the past to be related quite closely to emotional states.

All of this means that we must be very careful to assess the nature of the evidence offered for the effectiveness of fringe medicine. Any "proof" offered must include a rigorous definition of the condition in the first place, so that we know a real illness is being treated. It must also exclude effects based on the randomness of the human physiology and on the effect of the relationship between the practitioner and the patient. Experiments to establish such proof are not difficult to organize, in spite of the protests of the fringe practitioners. The trouble is that, when attempts are made, the strength of the proof is in inverse proportion to the rigor of the experimental controls. This is certainly the case with one of the fringe techniques that has been tested: iridology (*SI*, Spring 1983). This is a method of diagnosing disease using the patterns in the iris. It was developed and promoted by Ignatz von Peczely of Hungary.

Dr. von Peczely had a pet owl, and one day he accidentally broke its leg. Peczely then noticed something odd in the owl's eye—a black stripe had appeared on the iris where no black stripe existed before. This incident led Peczely to the belief that the organs and systems of the body are represented on the iris and that if anything is wrong inside the body a corresponding change will be seen in the iris.

Each part of the body is represented by a segment of the iris, with the right eye dealing with the right side of the body, and the left with the left side. One fringe-medicine text endorses iridology in the following terms: "As a diagnostic tool, iridology has several obvious advantages over other systems. Merely by studying the two irises, the therapist can obtain information about all parts of your body simultaneously. And he or she can not only deduce your present state of health but also predict potential trouble spots. In addition, iridology is completely safe"—remember Freireich.

By looking at the iris, the iridologist comes up with such diagnoses as "severe gastro-intestinal toxicity and congestion, resulting in irritation in the bladder and lower back; underactivity in the ovaries and uterus; spasticity throughout the large intestine; sinus headaches and," not surprisingly after that list of problems, "depression." This is, of course, a good example of the category I mentioned earlier and includes several "nondiseases." But

iridology also deals with well-recognized physical conditions, and its use with these can be, and has been, put to the test.

In one trial, published in the *Journal of the American Medical Association,* there were two very interesting results. One iridologist in the study correctly identified 88 percent of patients who were actually suffering from kidney disease, merely by spotting the relevant blotch on their irises. That is good news. The bad news is that he also diagnosed 88 percent of his normal controls as suffering from kidney disease, when they weren't. The more important part of the study presented six iridologists with iridology photographs of the irises of 143 subjects, 48 of whom actually had kidney disease. The overall results were no better than chance.

Another controlled clinical trial carried out in Australia presented iridologists with iris photographs before and after the subjects developed an acute disease and asked iridologists to determine whether a change in the iris had occurred and, if so, which organ was affected. The only photograph identified as showing changes was actually one of two photographs taken two minutes apart, as a control.

The significance of these results is not so much their negative quality but the fact that the studies were done at all. With a fringe technique like this, the studies are not difficult to design or control; nor are they expensive to carry out. They reproduced as closely as possible the diagnostic situation for the iridologists, who do use detailed photographs, and so it was difficult for someone who claimed to be a practitioner of the technique to refuse to take part.

These studies are an example of the kinds of tests the practitioners themselves should be organizing if they are truly confident of the basis of their techniques. What have they got to lose? If they are right, they will prove it to a lot of skeptical doctors and patients; and, if they are wrong, they will save themselves a lot of wasted effort and disappointed patients in the future.

Unfortunately, negative evidence rarely has any impact on fringe practitioners, who sometimes seem more like priests than doctors, basing their convictions on faith rather than evidence. How otherwise can we explain remarks like the following, made by seemingly sane and intelligent analysts of the fringe-medicine scene: Rogerian therapy has "no set techniques and no set procedures to follow," "All teachers of t'ai chi emphasize the impossibility of describing it in print," or "The Feldenkrais method is difficult to explain quickly and easily." As Feldenkrais himself said: "The first principle of my work is that there isn't any principle."

These are statements of such monumental vagueness that it can only be blind faith that leads anyone to take these therapies seriously. In fact, fringe practitioners seem generally unworried about the shortage of convincing explanations for the phenomena they so firmly believe in. If you look at the various theoretical bases offered for the different fringe therapies, you will find a bewildering variety of hypotheses about how the body

really works, some of them contradicting one another. On the whole, this is not true of orthodox medicine. When a surgeon operates on the brain, he is dealing with the same organ that a physician might treat with drugs or a psychiatrist with ECT. They would all agree on roughly how many cells it has, how large it is, and the important physiological and biochemical factors involved.

When a reflexologist treats a body, he has an entirely different perception of how that body works from, say, an iridologist or an acupuncturist. This is clear from the impressive but meaningless charts that purport to show the roots of human disease according to various different fringe theories. Is kidney disease rooted in the bottom sector of the iris or the center of the sole of the foot, or several different points in the ear or perhaps at the lower end of this complex set of energy zones? Or could it even be, although this suggestion may be too revolutionary to consider, that kidney problems make themselves known in the kidneys?

Any scientific explanation of the occasional effectiveness of fringe medicine is more likely to lie in the realms of orthodox psychology and physiology than in the more exciting worlds of forces, energy fields, meridians, and vibrations. And this is where we come to "psychopathology." Because, in spite of the lack of evidence and even in spite of evidence against the validity of most fringe-medicine techniques, people still believe in them—their thought patterns seem to run along irrational lines and lead to totally invalid conclusions. This may be what I can only describe as the "ratchet effect."

Some of us are old enough to remember watches that you had to wind up by hand, with a little knurled knob on the side. Indeed they even had little moving bars, quaintly called "hands," instead of glowing rectangular numbers. In those far-off days of the 1970s, we wound our watches by turning the knob backward and forward between our fingers. When you wound it one way, it caused a spring to tighten—but, and here's the cunning bit, when you wound it the other way *it didn't cause the spring to loosen!* At work inside the watch to cause this miracle of a decidedly unreligious nature was a small mechanism called a "ratchet." Rotation forward increased the tightness of the spring but rotation backward *left* it tight, so that the next rotation could add a further increment to the tightness.

I believe that the human brain has a ratchet, and it is one that swings into place whenever people are confronted with something they really want to believe in. Whenever they come across an example of a phenomenon that reinforces the belief they are interested in preserving, the mainspring of their belief tightens a little bit. But, if a little later they come across something that doesn't reinforce the belief, something that even contradicts the hypothesis they are fondly nurturing, the wheel rotates in the opposite direction but the spring doesn't loosen—it's still as tight as it was, and their faith is unshaken.

A fringe treatment that coincides with improvement on one occasion out of ten will nevertheless leave a patient or even an observer gasping at its effectiveness. It is like the medium who says, "I'm getting your mother or possibly your aunt or it may be your grandmother, and her name is something like Edna or Betty or a name beginning with M or D, and she says she hopes that you had a good holiday by the sea or do I see mountains?" and the ratchet swings into action to produce a satisfied customer who is convinced that the medium conveyed an accurate message from her dead Aunt Mary about the family holiday in Majorca.

This tendency operates throughout the rich variety of human mental activity. In fact, I believe we have several ratchets. We have a "bad news ratchet," for example. "Oh, isn't the world a depressing place," we say as planes crash, bank-robbers rob, and earthquakes quake, each of these sad events tightening the mainspring of our depression. Meanwhile, Boy Scouts help little old ladies across the road, jumbo jets take off by the minute and fail to crash and burst into flames, and parents and children frolic joyfully in the park on family picnics that don't end in tragedy, and it has no effect on the depression. We certainly have a "there are more things in heaven and earth, Horatio" ratchet that clicks inexorably tighter with every rumor of spoons bent, distances viewed, or telephones that fly across rooms with only the gentlest nudge from a disturbed teenager. Meanwhile, as fakes are unmasked or confess, and conjurers duplicate their feats and perform even more amazing ones, our little ratchets protect the spring from slipping back and plunging us into a boring real world where, on the whole, usual things happen usually and impossible things don't happen at all.

I began by suggesting how fringe medicine might work. I hope that, at the very least, I have shown how difficult a question that is to answer, because fringe medicine itself is such a ragbag of separate practices with little in common other than the fact that people sometimes feel better after indulging in one or the other of them. In that sense, they come under the same category as winning a lottery or having an enjoyable night out. It seems clear that there are few, if any, situations where, if someone does feel better, it is for the reasons offered by the therapists. The final question is: Does all this matter? As Freireich pointed out, most fringe remedies are harmless—that's one of the secrets of their success. Does it matter if gullible practitioners continue to treat gullible patients? One reason I think it matters is that it seems to be a form of semi-institutionalized dishonesty, and on principle that seems to be wrong. But there is a second, more important reason: Real harm can occur. And there are two pieces of evidence, picked at random over the past few months, that suggest how. One relates to a child with leukemia whose parents refused chemotherapy and took her to a homeopath. The diet of fresh fruit juice and homeopathic pills unaccountably failed to do the child any good, and she died. The second involves a woman with miliary tuberculosis, a highly infectious form of the disease, who refused hospital treatment and went to a fringe

practitioner instead. He diagnosed constipation and gave her a mixture of Epsom salts and herbs. The woman died, after a period at large during which she distributed TB-laden sputum among those around her.

You may believe that people should be allowed to kill themselves with the treatment of their choice. But, even if you take that excessively libertarian view, we are faced here with the death of a child because of her *parents'* views and the presence in the community of someone who was a threat to the environment because of her own mistaken beliefs. Even these two incidents alone are too high a price to pay for the freedom to offer unproven and unscientific remedies to the general public. •

Australian Skeptics' Halley's Comet Tour of Australia, Hawaii, and Tahiti

One of the best places to view Halley's Comet is from Down Under. The Australian Skeptics have organized a tour for North Americans to coincide with their Second Annual Convention, to be held in Melbourne, March 28 to 31, 1986. Viewings of the comet from the Gilgandra Observatory (Gilgandra) and from the Mt. Stromlo Observatory (Canberra) are included in the package tour. This two-week excursion is offered from both San Francisco and Los Angeles. Both leave Saturday, March 22, and return Sunday, April 6, 1986.

Sat., Mar. 22:	Leave San Francisco 9:00 P.M., arrive Hawaii at midnight.
	Leave L.A. at 9:00 P.M., arrive Hawaii 11:30 P.M.
Mon., Mar. 24:	Leave Hawaii 1:40 A.M. CROSS INTERNATIONAL DATELINE.
Tues., Mar. 25:	Arrive Sydney 7:40 A.M.
	Leave Sydney 11:00 A.M., arrive Dubbo, N.S.W., at noon for Halley's Comet tour to Gilgandra Observatory.
Thurs., Mar. 27:	Leave Dubbo 3:00 A.M. for Sydney.
	Arrive Sydney 8:30 A.M.
Fri. Mar. 28:	Leave Sydney 9:30 A.M. Arrive Melbourne 10:40 A.M.
Sun., Mar. 30:	**Second National Convention of Australian Skeptics in Melbourne**
Mon., Mar. 31:	Leave Melbourne for Canberra. Lunch with Canberra Branch skeptics on sheep station; evening tour of Mt. Stromlo Observatory.
Tues., Apr. 1:	Leave Canberra for Sydney. Farewell Dinner with N.S.W. Branch skeptics.
Wed., Apr. 2:	Leave Sydney 11:15 A.M. CROSS INTERNATIONAL DATELINE.
	Arrive Tahiti 10:05 P.M.
Sat., Apr. 5:	Leave Tahiti 11:30 P.M.
Sun., Apr. 6.	Arrive Los Angeles 9:25 A.M.

Note: Visits to Hawaii, Dubbo, Canberra, and Tahiti may be deleted.

Remember the exchange rate is advantageous—$1 U.S. is now worth $1.43 A.U.S. For further Conference and/or travel information contact Mary Rose Hays (716-832-3422), SKEPTICAL INQUIRER, Box 229, Buffalo, NY 14215-0229.

Computers and Rational Thought: Is the Chip Taking Too Big a Byte?

With their linear approach to problem-solving and their YES/NO response to life, computers may actually contribute to uncritical acceptance and flaccid thinking in dealing with claims of the paranormal.

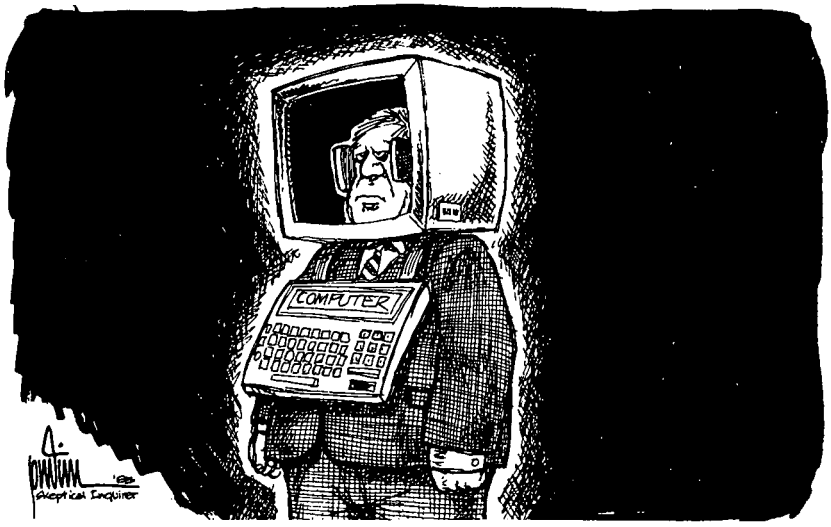
Ray Spangenburg and Diane Moser

FOR MANY OF US the computer is symbolic. It has become almost a metaphor for all that is logical and rational. As it infiltrates more and more corners of our society, we the initiated silently scoff at those who show fear, and we feel quietly satisfied that at last the logical and lucid have begun to replace the irrational and confused. Occam's razor hangs poised, ready to cut clean. The revenge of the rational is at hand. And we who have been jousting against the careless and superstitious raise our battered, quixotic helmets in weary and thankful welcome.

But, while the computer has provided vital research tools to the scientific community, turned 10-year-olds into veteran byte-crunchers, revolutionized office correspondence, streamlined even small-business accounting, and invaded more than a million American homes, the long-range social effects may not be entirely in the interests of disciplined, critical thinking.

The problem is not with the computer, but with certain changes in our thinking environment that it may bring about. Changes that may reinforce the kind of careless thinking that permits unquestioning acceptance of claims of the paranormal.

Raymond Spangenburg and Diane Moser are San Francisco-based freelance writers specializing in science and technology. They are co-authors of four books on computers, including Educational Software *and* Personal Word Processing *(Wadsworth 1984) and coeditors of* BASIS, *the Bay Area Skeptics' newsletter.*



Speed vs. Quality

The computer is a masterful efficiency expert. With it we can achieve goals more quickly, easily, and efficiently than ever before. But, as Samuel Florman (1984), an eloquent and resourceful defender of technology, pointed out in a recent article in *Technology Review,* such speed and ease may be achieved at the cost of depth and comprehension. Florman describes how he received a book-review assignment from the *New York Times* on a Tuesday with a Thursday due date—that same week! With the aid of the one-step word-processing typesetter in the bowels of the *Times* building, a helpful keyboard operator, and a telephone, Florman dictated his review almost directly into type on Thursday, made corrections Friday morning, and read his review in the paper Friday afternoon. In another scenario, he might have had his own word-processor transmit his copy directly over telephone lines, with no intervening operator. Our own most recent book went to the compositor in the form of a 5¼" magnetic disk. And the day is not far off when no keyboard entry will be necessary on anyone's part—the computer will just listen, recognize voice patterns, and act on them.

We have already witnessed the phenomenon of the instant book—the quick fix on the tragic Jim Jones cult in Guyana, the Carl Lewis story that hit the stands just days after the close of the 1984 Olympics. But, with the speed and simplicity of computerized word-processing, the writer may in fact lose out on the necessary time for contemplation, re-examination of one's thoughts, and critical analysis of one's own ideas. And this is a loss not just to writers but also to all who read their work. What we have gained in speed, we may have lost in coherence, clarity, and reflective

deliberation.

If indeed we are to listen to and contemplate the words of our writers and thinkers, if we are to see a benefit from their influence upon our society, then we must demand quality, not just quantity, from them.

And our preoccupation with speed can sacrifice quality and the benefit of analysis beyond the world of words. Speed is the antithesis of contemplation, and contemplation is the handmaiden of creative thinking in every field—the kind of thinking that explores alternatives and looks beyond the apparent and even obvious. The kind of thinking that questions the believable hoax and the mystical, pseudoscientific, or romantic explanation.

The matter then is one of mind-set. The critical mind should be the contemplative mind. The hallmark of the true skeptic is his or her ability to search through a labyrinth of possibilities and arrive at conclusions that are logical and fit not only the facts on hand but the facts hidden behind the hand as well.

The Limitations of Framework Thinking

As we become more dependent upon computers, we begin to get locked into computerized problem-solving techniques. Sales clerks wait docilely in turn for use of a calculator to figure a simple addition. Writers addicted to word-processing become allergic to pencils and yellow pads and imagine they can only write positioned before the phosphor screen. Not only do we no longer stretch our minds to do "what the machine can do for us," but—because we have limited the environment in which we do our thinking—we may cut down our range or pass up creative ideas as well.

One of the greatest dangers of the computer is the implication, with its binary logic, its YES/NO, OFF/ON line of thinking, that there is only one right way to solve a problem, to answer a question, or to seek a solution. The computer's implied endorsement of strictly linear thinking may stifle our ability to take those creative "leaps," rambling side-paths, digressions, and alternative explorations that are the very essence of creative activity—and critical thinking. For critical thinking at its richest is creative thinking. In dealing with claims of the paranormal, the simple question "How else could this be done?" or "What other possible explanations are there for this?" can be the critic's most valuable tool. Once we have lost the ability to find "alternative" solutions to our problems, we become susceptible to anyone who imposes an "authoritatively endorsed" or "it is because it is" argument upon us.

On the cover of a 1984 issue of *Science News,* a Sidney Harris (1984) cartoon depicted a robot musing to itself: "Artificial intelligence, yes. But I'm not so sure about artificial insight and intuition." So far, at least, computers really don't think like humans. In fact, recent research (Lerner 1984) indicates that the human mind probably does not function in a

strictly binary, linear mode at all but that it is constantly networking and providing a sort of Gestalt feedback—the probable source of that "Aha!" or "Eureka!" experience of intuitive discovery. Linear thinking works well for certain kinds of problems. But it may leave out looking behind the façade. As James Randi (1981) points out, scientists, who are trained in linear problem-solving, "far from being the hardest audience for the professional charlatan, are often the easiest. A scientist thinks logically and in a straight line; his profession requires him to be able to do so. That's the way science works." But we are at our best when we add another, nonlinear dimension to our thinking, look for other possibilities, test our assumptions, look behind the façade.

In their book *The Psychology of the Psychic,* David Marks and Richard Kammann (1980) also emphasize the need to develop the skill of alternative thinking to free ourselves from false assumptions, to develop the "*art of doubt* to get unstuck from some of our self-defeating practices." They continue: "All great scientific discoveries illustrate this point. Our direct perception tells us that the sun drifts overhead from east to west every day. At night time, the whole sky drifts overhead in the same direction. It took the brilliance of Copernicus to see that one gets the same effect by a rotating world, and one gets the seasons by placing the sun at the center of the 'universe,' with the earth revolving around it. . . . We are overschooled in knowing the facts, having the answers, pretending to be 'right.' "

Where quality of thought is lost or abdicated, the vacuum is often filled with the careless and irresponsible. Worse still, it can be filled with the superstitious and mystical. When arguments become reduced in depth and scope, recourse to the quick and easy comes much too easily. "In the beginning there was God" makes a much easier argument even today than any attempt to understand the richly detailed, still mysterious, and complexly conceived hypotheses of modern physics and the Big Bang.

Technological Mysticism

Ironically, as Daisie Radner and Michael Radner (1982, 200 ff.) point out in *Science and Unreason,* the very presence and indeed omnipresence of science and high technology in our lives may lead us to an easier acceptance of the mystical and miraculous.

Confronting more and more "miracles" of modern science and technology, such as television, laser beams, quark theory, voyages to the moon and planets, and small personal computers, the average mind accepts much—both actual and theoretical—that it does not truly understand. No one denies the existence of a television set simply because he or she does not understand its technology. How easy then to accept an argument for the existence of ESP, telekinesis, or the Loch Ness monster, simply by acknowledging that "there are many things in life that we do not under-

stand yet."

The computer then may not be a shining knight riding to the rescue of all that is thoughtful and rational. Like most "solutions," it may bring with it a new and different set of problems, especially if we allow it to become a standard by which we measure our very human thinking or a sort of excuse to stop thinking altogether. The abdication of personal thought can be a cultural disaster, whether the abdication is done in favor of a monarch, a tyrant, a religious authority, or a computer. And in this age of ever-increasing complexity and apparent contradiction, the temptation of mental abdication is too great—as demonstrated by the ever-growing preponderance of pseudoscience, mystical cults, and religious fanaticism.

To use any tool well, one must also use it with care. As a tool the computer may be one of the finest creations of the human mind, a willing slave and an obedient servant that frees us from the repetitive and the mundane. But it is an aid to help us think. Not to teach us *how* to think or to think for us.

So it is time to rethink this wonder machine's place in our thought processes—making sure that in capitalizing on its benefits we do not abdicate our own responsibilities. As skeptics of not only the irrational and the illogical but of all that is presented to us as unquestionable fact, the responsibility is ours.

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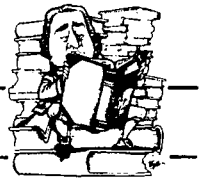
Book Reviews



The Not So Mysterious Prehistoric Past

Ancient Astronauts, Cosmic Collisions, and Other Popular Theories About Man's Past. By William H. Stiebing, Jr. Prometheus Books, Buffalo, N.Y., 1984. 217 pp. $9.95 paperback, $19.95 hardcover.

Kenneth L. Feder

THERE MUST BE great affection for the discipline of prehistoric archaeology among panderers of pseudoscience. The combined works of Erich von Däniken have sold in the tens of millions. It has been estimated that some 200 full-length books have been published on the topic of the alleged "Lost Continent of Atlantis." Bookstore shelves burgeon with works on psychic archaeology, prehistoric subterranean civilizations, lost races, inexplicable artifacts, and ancient astronauts.

Unfortunately, these same bookstore shelves are far from redolent with the works of professional scholars in archaeology and related disciplines wherein these scientists respond to the nonsense of pseudoscience. The problem seems to be one of economics and attitude; publishers seem to be convinced that silliness sells and rationality does not, while professionals seem to fear that: (1) by engaging in debate with pseudoscientists we lend a credibility to them that they do not deserve; (2) it is a waste of time to respond to archaeological pseudoscience since believers will believe in spite of the evidence and logic behind the scientific approach to the past; and (3) in any public forum (debate, article, book), complex scientific arguments will invariably lose out to the emotional appeal of simplistic, romantic, pseudoscientific explanations of the human past. Such rationalizations for avoiding the whole issue should sound familiar to concerned scientists in other fields.

Nevertheless, in the field of human prehistory there have been a few published book-length attempts by professionals to inform the public of the genuine human past by responding to extreme "revolutionary," pseudoscientific constructs of that past.

Perhaps the best known of these is *Lost Tribes and Sunken Continents,* published in the early 1960s and written by the late Robert Wauchope (an anthro-

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pologist). Two more recent and equally valuable works are *The Past Is Human* (Taplinger Press), by Peter White (an anthropologist), and *Exploring the Unknown* (Plenum Press), by Charles Cazeau and Stuart Scott (a geologist and an anthropologist). Unfortunately, that just about completes the list of such works.

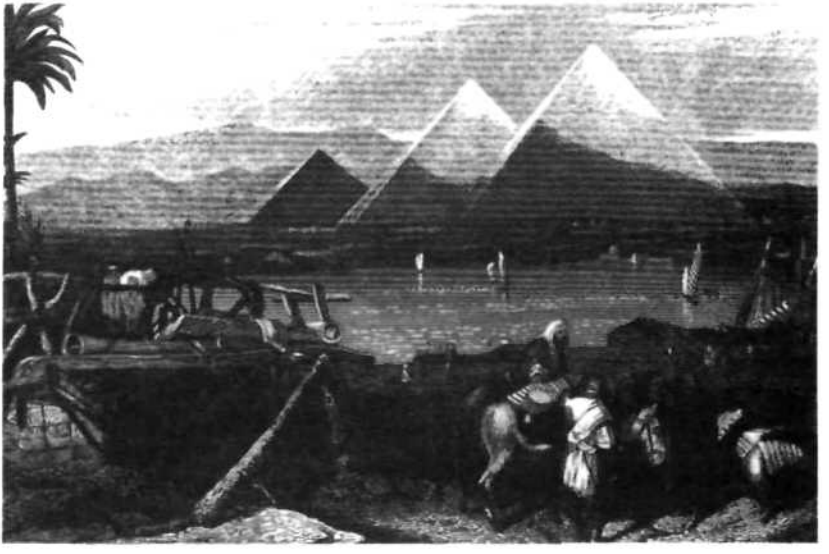
However, we now have another member to add to this elite club. *Ancient Astronauts, Cosmic Collisions, and Other Popular Theories About Man's Past*, by William Stiebing (a historian), is the most recent and very welcome addition to this extremely exclusive bibliography of published professional responses to pseudoscientific archaeology. It is a fine work and Stiebing deserves our praise as well as our gratitude.

The author deals with a series of extreme claims concerning the human past. Specifically, and in sequence, Stiebing discusses: (1) the biblical flood, (2) the Lost Continent of Atlantis, (3) the catastrophism of Immanuel Velikovsky, (4) ancient astronauts, (5) the ostensible mysteries of the pyramids, and (6) the pre-Columbian discovery of America.

Stiebing's approach is to consistently and explicitly compare the facts of the past—the actual data of history and prehistory—with the fanciful interpretations of the past peddled by the pseudoscientists. The approach is contextual; the overarching theme is that the past needs to be understood on its own terms.

For example, in Chapter 1, Stiebing clearly places the biblical story of Noah's flood within its literary/historical context. Stiebing lets the reader know that the biblical story of the flood was merely an updated version of the legend that first appeared in the Mesopotamian *Gilgamesh Epic* (where Noah is Utnapishtim and Yahweh is Ea [among others]). Stiebing also shows that the Bible itself contains two contradictory accounts of the flood (disagreeing in such basic particulars as the number of each "kind" of animal taken on board the ark, the source of the flood water, the duration of the flood, and so on).

Stiebing goes on to discuss modern attempts to find remains of Noah's ark on Mt. Ararat in Turkey, noting quite correctly that the Bible states that the ark



landed not on Mt. Ararat but on the "mountains of Ararat"—a vaguely defined geographic region that includes parts of Turkey, Iran, Iraq, and the Soviet Union. Stiebing then dismisses alleged geological evidence provided by the flood enthusiasts for a universal deluge and summarizes the so-called evidence for ark sightings, these being as substantive as evidence of unicorns and sightings of fairies.

The only deficiency I see in this chapter concerns Stiebing's cursory coverage of the instigators of modern flood "research": the "scientific" creationists. Beyond using them as a source of ark-sighting stories, there is little discussion of their work. Thus, while Stiebing does an admirable job of placing the flood myth within its historical context, he is less successful at placing modern flood claims within contemporary sociological, psychological, religious, and political contexts. Also missing is any discussion of the inherent improbability of the details of the flood story. Reference might have been made here to the special 1983 issue of the journal *Creation/Evolution* (issue 11) devoted to the flood myth.

Chapter 2, on Atlantis, is well done; again, the strength in Stiebing's discussion rests in his unequivocally placing the story in its historical context and, particularly, in positioning the written source of the Atlantis legend firmly within the literary and philosophical contexts of the work of its author—Plato. Perhaps Stiebing's two most important points are:

1. Supporters of the historical reality of Plato's Atlantis story make reference to claims of the truth of the tale embedded within the two dialogues where Atlantis is introduced and discussed. Stiebing points out that Plato made this claim of historical accuracy for other stories that no one even suggests were genuine. It was merely a literary device that Plato used on a number of occasions.

2. The texture of the Atlantis dialogues is one of invention. As Stiebing points out, in the Timaeus dialogue Socrates requests that his students tell him a story of a perfect society in action. Not surprisingly, in the following dialogue one of these students, Critias, does so, *amazed* that in the tale he is about to relate (and that he heard from his grandfather, who heard it from his father, who heard it from the sage Solon, who heard it from some Egyptian priests!), the characteristics of the perfect society (which is *not* Atlantis, but ancient Athens) agree, in astonishing particularity, with the theoretical society of Socrates's invention. *Amazed* indeed! One can nearly see Plato winking across the centuries.

Stiebing then discusses the physical evidence, both geological and archaeological that mitigates against the historicity of the Atlantis legend. He also takes on those who would pick and choose legends from widely varying cultures and from different time periods to support the Atlantis story.

Other chapters are equally successful. Stiebing is able to refute on historical grounds Velikovsky's claims of enormous catastrophes afflicting the earth in the distant past (Chapter 3). Once again, the greatest strength of the discussion rests in Stiebing's ability to provide historical context, this time for the history that Velikovsky relies upon so heavily (Aztec legend, the Popul Vuh of the Maya, the Old Testament of the Bible, assorted Egyptian papyri, Sumerian tablets, and so on). Stiebing shows quite clearly that the catastrophes described in these basically religious tracts were never intended to be taken literally. Even if they did bear some historical truth, they are from such widely varying time-periods they could not be referring to the same events. Again, Stiebing's point is that we must view such writings from the perspective of the times in which they were written, not from a biased, twentieth-century hindsight. From this perspective, "the mountains skipped like rams, the hills like lambs" is more reasonably interpreted as a poetic

device for glorifying the power of god, not the eyewitness account of some planetary catastrophe.

Stiebing similarly demolishes the claims of Erich von Däniken concerning extraterrestrial involvement in human physical and cultural evolution (Chapter 4). He deals specifically with alleged biblical descriptions of UFOs, the Piri Re'is map, the Nazca lines, the Palenque sarcophagus, Easter Island, and a series of advanced artifacts from around the world. Stiebing points out the circularity of von Däniken's approach wherein he presupposes an explanation, searches for artifacts or writings that can be forced to fit the explanation, then claims that these same artifacts and writings prove the explanation. Stiebing misses Nickell's experiment in ground-drawing replication (SKEPTICAL INQUIRER, vol. 7, no. 3) and this reviewer's *Humanist* article (Jan./Feb. 1980) positing a racist undercurrent in von Däniken's argument. Nevertheless, he provides a valuable summary of the case against ancient astronauts.

Next on Stiebing's agenda is the pyramid (Chapter 5). Credulous authors have asked how mere humans could have accomplished such feats of engineering and construction. They have wondered if enormously advanced knowledge were not somehow encoded in the vital statistics of the Great Pyramid at Giza; they have speculated about the connection between Egyptian and Mesoamerican pyramids; they have made claims about the preservative effect of the pyramid shape.

Stiebing responds to all of these. Direct evidence (quarry stones, cutting tools, sledges, ramps) and indirect evidence (paintings and textual accounts) of pyramid-building techniques are noted; notions of precocious knowledge contained in pyramid proportions are shown to have been based on incorrect nineteenth-century measurements and wishful thinking; similarities among pyramids found on different continents are shown to be largely superficial, with basic dissimilarities in construction techniques and functions minimizing the possibility of historical connection. He references controlled experiments in "pyramid power" that suggest that no such thing exists.

Again, the strength in Stiebing's argument rests in the context he provides. Why did the Egyptians build the pyramids? Stiebing lets them answer that themselves: "a staircase to heaven is laid for him [Pharaoh]" (as quoted on page 116). Did the Egyptians teach the Mesoamericans to build pyramids? How could they when their contexts of construction and use were so different (and when they were not even contemporaneous)?

On the question of who discovered America (Chapter 6), Stiebing again places the argument in historical context. He shows that there is a long and ignoble history to speculations about who "really" discovered America and who "really" is responsible for the development of sophisticated culture here. Whether the claim is made for Egyptians, Romans, Greeks, Chinese, Hebrews, or "Hindoos," such speculations have had, at their heart, a desire to deny priority to American Indian settlement of the Western Hemisphere as well as an inclination to reject the notion that Indians were capable of attaining civilized status on their own.

Stiebing approaches the most recent of the diffusionists (Barry Fell) primarily by assaulting his claims of a linguistic connection between native American languages and various Old World tongues. He also calls into serious question Fell's "translations" of alleged ancient writing in stone found in the New World and ascribed to wandering pre-Columbian Celts, Libyans, Phoenicians, and so on. (They are either not ancient or not writing, or neither!) I would have liked to

have seen a bit more on the archaeology of the alleged New World megalithic sites (scant attention is paid to Mystery Hill, for instance, the Vatican of such sites), but perhaps that is my disciplinary bias.

Stiebing concludes this chapter with an extremely valuable discussion of the evidence for a pre-Columbian Viking presence in the New World. The few pages he devotes to this (pp. 159-164) constitute one of the best summaries of the extant data that I have seen (one minor, though annoying problem: one of his major references in the text—Holland 1956—was omitted from the bibliography). It also represents an excellent case in point; archaeologists are not automatic nay-sayers of new hypotheses. We are, instead, skeptical of *all* proposed explanations until the data show them to be valid. In the example of Vikings in America, this has been the case. For Barry Fell's (and others') claims, as Stiebing shows, this has not been the case.

Finally, there are two deficiencies in Stiebing's book that need mentioning:

1. Archaeology is, by its very nature, a visually oriented discipline; after all, we seek to know a people through their works. Material things like arrowheads, potsherds, temples, and pyramids are often all we have left to us to reconstruct the culture of an ancient people. Yet in a book of some 174 pages of text there are just 14 figures and all of these are line drawings; there are no photographs. It is one thing to say that Egyptian pyramids look unlike Mesoamerican pyramids, the Piri Re'is Map is inaccurate, or that Quetzalcoatl was not a white man, and to, therefore, conclude that tales of intergalactic pyramid engineers, wandering Atlanteans, or seafaring Egyptians are obviated by the data. It is quite another thing, especially for those unfamiliar with the sites or artifacts in question, to show actual photographs supporting these statements. Time and again I went searching for photographs of the sites, structures, or artifacts Stiebing was discussing (Mesopotamian ziggurats, Nazca lines, the Piri Re'is map, etc.), and time and again I was disappointed. I doubt that this is the author's fault, but it nevertheless is a drawback to the book.

2. The second weakness is more significant. To amend an old saying, there are three necessary focuses when dealing with archaeological pseudoscience: context, context, and context. Stiebing does an admirable job of providing cultural and historical context for the instances he discusses. What is lacking, however, is a *detailed* discussion of the context of scientific epistemology and a self-conscious, explicit comparison of science and pseudoscience. Except for a very short (fewer than four pages) section in the final chapter, there is little attempt to view these pseudoscientific archaeological claims within the broader context of pseudoscience as a whole. His attempt to generalize about pseudoscience (pp. 167-170) is valuable; I only wish there were more of it.

This second criticism is serious. The book, though not intended so, can be read as an indictment merely of particular cases and not of a general approach to the past, or to any other field of knowledge. How does the reader then assess the next extreme claim about the human past to come along? What about Bigfoot? How about the "revolutionary" prehistoric constructs of Jeffrey Goodman's *American Genesis?* (See my critique, *SI*, vol. 7, no. 4.) Stiebing does not discuss these, so how does the reader know how to assess them?

Perhaps, after all, it is not so important if people believe in Noah's flood, Plato's Atlantis, Velikovsky's catastrophes, von Däniken's ancient astronauts, mysterious pyramids, or wandering Celts. Certainly, it is useful to refute these as specific cases, but perhaps it is more important to exploit them as *examples* of

pseudoscientific thought and to provide the reader with the intellectual tools to assess all such claims, whether they relate to prehistory, astrology, or clairvoyant cockroaches. There should have been much more of this in this book.

That said, I can still highly recommend Stiebing's book for what it is: a well-written, very informative discussion of a number of specific, irrational, popular claims made about the human past. As such, it should not really be used alone for a class text; it needs a companion text in scientific thinking, such as Radner and Radner's *Science and Unreason* (Wadsworth). Nevertheless, Stiebing's work deserves our praise. It is a valuable and significant response to the nonsense that hounds the science of the human past. •

Other Realms of Reality

From Newton to ESP: Parapsychology and the Challenge of Modern Science. By Lawrence LeShan. Thurstone Press, Wellingborough, England, 1984. 208 pp. $9.95 paperback.

James E. Alcock

THERE HAS BEEN a trend in recent years to link parapsychology with the wondrous happenings and speculations associated with the world of modern physics. This not only lends prestige to the parapsychological endeavor, but it removes the debate about the reality of psi from the mundane domain of experimental methodology and statistical analysis to the lofty realm of quantum mechanics, with all its paradoxes and enigmas. Critics as well as proponents must silence their voices and bow their heads in awe as one expert or another tells them about what is, what is not, and what may be possible in the world of the quantum.

In an offhanded way, I must give Lawrence LeShan credit for eschewing this facile approach to accommodating parapsychology into the scientific world-view. In *From Newton to ESP: Parapsychology and the Challenge of Modern Science,* instead of simply arguing that psi, whose demonstrated existence he takes for granted, "makes sense" if one understands the quantum realm, LeShan takes a much bolder leap and offers to the reader not just one but two *other* realms of reality. He maintains that it is necessary to postulate a total of five such realms in order to accommodate the data forthcoming from nature.

These five realms are: (1) the realm of everyday sensory realism; (2) the realm of the very small, discovered by Max Planck; (3) the realm of the very large or fast, discovered by Albert Einstein; (4) the realm of purpose (which LeShan

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subsequently also refers to as the realm of molar [meaningful] behavior); and (5) the realm of consciousness. In the latter two of these, paranormal processes apparently occur; LeShan takes the position that in this "multitracked" universe what is impossible and paranormal on one track (i.e., in one realm) may be quite possible and normal on another. In keeping with the view that psi processes are normal in some realms, he prefers to label ESP as "Type B perception" in order to stress that it is in its realm just as normal as is ordinary, or "Type A," perception in the sensory realm.

LeShan argues that his new realms get rid of some of the puzzles that arise when one tries to understand how psi processes operate at apparent variance with the laws of nature as we know them. Consciousness cannot be located in physical space, he says, since the concept of space does not apply in that realm: "It is simply not legitimate to say that because the *bodies* of two subjects in an experiment are 300 miles apart, that their consciousnesses are also 300 miles apart" (p. 97). In the realm of consciousness, then, LeShan believes that telepathy makes sense.

However, one might ask by what right does LeShan conjure up these new realms? What allowed Planck and Einstein to posit their new realms and win acceptance of them? Their "realms" were in fact forced upon them by data; the explanatory power offered by their realms made some well-documented anomalies (such as the precession of Mercury, in the case of Einstein) nonanomalous. Most important, their ideas led to specific predictions that could be put to the test and have been successfully tested over and over again. As for LeShan's two new realms, they are based entirely upon speculation and are posited to accommodate anomalies whose very existence is *the* basic issue. These realms offer nothing other than essentially metaphysical explanations for doubtful "psychic" phenomena and for free will. It is as if Einstein were to offer his theory of relativity and argue for its correctness in showing that it can account for the precession of the planet Mercury, while all along astronomers were unable to demonstrate that Mercury precesses, and most of them put down the claims of such precession to observer error.

LeShan argues that parapsychology's move into the laboratory to attempt to apply scientific research methods to the sensory realm was a great mistake. Parapsychologists, he maintains, have fallen into the trap of trying to do what the critics tell them is necessary to do in order for parapsychology to be a real science—to produce a repeatable experiment. Yet, he says, in the realm of consciousness, observables cannot be quantified and no situation can be repeated, and so the concept of repeatability is irrelevant and invalid. Consequently, one cannot establish any laws in the realm of consciousness, since that requires repeatability. Furthermore, one cannot make accurate predictions in the consciousness realm because, while the past is determined, the future is free. (This makes one wonder why LeShan would later describe his studies with psychic Eileen Garrett as having been conducted under the most careful of scientific conditions; is he not himself referring to the science of the sensory realm in this case?)

LeShan promotes Ehrenwald's distinction between "need-determined" and "flaw-determined" psi-occurrences. The former supposedly arise from a *need* to communicate when normal sensory channels are blocked, whereas the latter are the product of a temporary breakdown of the filter that prevents us from being overwhelmed by psi-transmitted information. Modern parapsychologists, in the attempt to be "scientific" and to produce laboratory evidence, have concentrated,

according to LeShan, almost entirely on the psychologically insignificant flaw-determined occurrence, while the much more important need-determined type has been more or less ignored. He fails to tell the reader that the reason for this is that parapsychologists themselves came to realize that anecdotal testimony is unreliable in the extreme. Rather than being impressed by the many psychic anecdotes he relates, LeShan would do better to direct attention to the central problem of anecdotal evidence: How can we tell that the anecdote really describes the experience—for example, putative precognition of an event—that the person had at the time? How do we ascertain that the powerful processes that often lead to distortion both in perception and memory have not produced, after the fact, the apparent correspondence between the experience and the event? Can we even be sure that the event occurred as described by the anecdote?

For all his attempts to play philosopher of science, LeShan ignores the most important issue: What is evidence for psi phenomena? What kind of evidence would justify a belief in ESP? How might we rationally decide whether or not the "realm" of consciousness exists? Do we accept it on faith? Do we rely on our subjective impressions? (If so, watch out for werewolves and demons.) LeShan offers no discussion of how one might decide, for example, whether or not an out-of-body experience is a manifestation of an event in the consciousness realm or whether it is merely the result of sensory and cognitive processes in the ordinary sensory realm.

From Newton to ESP attempts to demonstrate that science, because of the narrowness of vision of most of its practitioners, has failed to recognize psychic phenomena. It also tars most parapsychologists with the same brush: When one encounters statements by a parapsychologist, such as "Most of them are apparently hopelessly mired in a bog of outmoded science and philosophy" (p. 15), one would assume that the author is attacking the critics of parapsychology, for this is a common line of attack. However, it is not the skeptics but rather fellow parapsychologists toward whom LeShan directs this remark, arguing that not only is contemporary psychical research in a "sad and depressed state," but that it is unlikely that it can be rescued by those currently working in the field.

This book certainly will not appeal to the skeptic, for it consists of philosophical and metaphysical speculation that is much less sophisticated than it is dressed up to be. Nor will it please the serious parapsychologists (and here I refer to people whom LeShan has already dismissed as being incapable of leading parapsychology out of the wilderness), because it attempts to bring psychical phenomena right back into the metaphysical fold that its modern leaders have been trying to escape for so long. Yet perhaps LeShan is truer to the historical tradition of parapsychological research than many of the modern leaders; he is clearly devoted to the notion of other realms of existence, realms in which consciousness and purpose reign supreme. Indeed, the quest to put the concept of consciousness or soul on a scientific footing was the original driving force behind formal parapsychological inquiry.

LeShan would no doubt argue that in my criticism I am confining my vision to the vulgar sensory realm and demanding evidence relevant to that realm but irrelevant to the realm of consciousness or purpose. Perhaps, but it is such dogged insistence on "sensory" evidence that over the years has kept most practitioners of science from tumbling into the realm of self-delusion. •

1986 CSICOP Conference

SCIENCE AND PSEUDOSCIENCE

April 25 and 26, 1986

at the University of Colorado at Boulder

Keynote Address by

STEPHEN JAY GOULD

Friday, April 25

Glenn Miller Ballroom, UMC Building

2:00-5:30 P.M.

"CSICOP's Tenth Anniversary": Paul Kurtz, CSICOP chairman, professor of philosophy, State University of New York at Buffalo

"Psi Phenomena and Quantum Mechanics"

Moderator: Ray Hyman, professor of psychology, University of Oregon

Murray Gell-Man, professor of physics, California Institute of Technology

Helmut Schmidt, senior research associate, Mind Science Foundation

"The Open Mind—Ten Years of Negative Research in Parapsychology": Susan Blackmore, Visiting Fellow Brain and Perception Laboratory, University of Bristol, England

"The Condon UFO Study—A Trick or a Conspiracy": Philip J. Klass, senior editor, *Aviation Week and Space Technology*

8:00 P.M.

Keynote Address: Stephen Jay Gould
A well-known author and CSICOP Fellow, Stephen Jay Gould is Alexander Agassiz Professor of Zoology and Curator of Invertebrate Paleontology, Museum of Comparative Zoology, Harvard

Saturday, April 26

Chemistry 140

9:00 A.M.-12 NOON

"Reincarnation and Life After Life"

Moderator: James E. Alcock, professor of psychology, York University, Toronto

Hypnosis and Reincarnation—Confessions of a Past-Life Therapist": Leo Sprinkle, professor of counseling services, University of Wyoming.

"Hypnotic Regression": Nicholas S. Spanos, professor of psychology, Carleton University, Ottawa

"Near Death Experiences": Ronald K. Siegel, psychopharmacologist, Veterans Administration, Los Angeles

"Past Tongues Remembered?": Sarah Grey Thomason, associate professor of linguistics, University of Pittsburgh

2:00 P.M.-5:00 P.M.

"Evolution and Science Creation"

Moderator: Lee Nisbet, associate professor of philosophy, Medaille College

Paul MacCready, chairman, AeroVironment, Inc., Kramer Award recipient

William V. Mayer, professor of biology, University of Colorado

Eugenie C. Scott, professor of anthropology, University of Colorado

Awards Banquet

Hilton Harvest House

6:00 P.M.: Cash Bar

7:00 P.M.: Dinner

Chairman: Paul Kurtz, CSICOP chairman

Presentations: Kendrick Frazier, editor, SKEPTICAL INQUIRER

In Praise of Reason Awards

Responsibility in Media Award

CO-RAP/CSICOP Student Science Experiment Award

8:30 P.M.

"Magic and Superstition"

James Randi, magician and author

Henry Gordon, magician and columnist, *Toronto Star*

Douglas Stalker, ("Captain Ray of Light"), satirist, associate professor of philosophy, University of Delaware

Robert Steiner, magician and chairman of the Bay Area Skeptics

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Articles of Note

Brown, Malcolm W. "Perpetual Motion?" *New York Times*, June 4, 1985. Nice tutorial on scientific reasons why the quest for a perpetual-motion machine can never be fulfilled.

Cherfas, Jeremy. "Mind-Over-Matter Cults Play with Fire." *New Scientist*, June 20, 1985, pp. 26-27. First-person account of firewalking, and its scientific explanation.

Cole, John R., and Laurie R. Godfrey, eds. "The Paluxy River Footprint Mystery—Solved." *Creation/Evolution* (P.O. 146, Amherst Branch, Buffalo, NY 14226), Issue 15, vol 5, no. 1, 1985. Special issue devoted entirely to a scientific team's first-hand investigations into the creationist claim that human footprints have been found alongside acknowledged dinosaur footprints in limestone of the Paluxy River in Texas. Cole, Godfrey, Ronnie J. Hastings, and Steven D. Schafersman contribute six articles that report the findings of this definitive study of the "mantracks." The result is a devastating scholarly debunking.

Frazier, Kendrick. "A Reporter's Checklist: Paranormal—or Self-Promoter?" *ScienceWriters* (National Association of Science Writers), vol. 33, no. 2, June 1985, pp. 4-6. Discussion of why news media reporting of fringe science and the paranormal is generally naive, superficial, and misleading (nine reasons are listed) and of what can be done to improve it. Calls on experienced science-writers to become more actively involved. Suggests they help educate their own editors, fellow writers, and the public about the distinctions between science and pseudoscience and insert themselves more actively in the editorial process to avoid grievous lapses of editorial judgment by their publications. Offers suggestions to general reporters as well.

Dickson, D. H., and I. W. Kelly. "The 'Barnum Effect' in Personality Assessment: A Review of the Literature." *Psychological Reports*, 47, 367-382, 1985. Summarizes research on the Barnum effect, the tendency for people to accept vague, ambiguous, and general statements as descriptive of their unique personalities. Concludes that the tendency to accept Barnum profiles depends on how favorable and personally relevant they are. Suggests further research directions relevant to understanding why people feel psychic and astrological readings are accurate descriptions of themselves.

Hofstadter, Douglas R. "World Views in Collision: The SKEPTICAL INQUIRER versus the *National Enquirer*." In Hofstadter, D., *Metamagical Themas*, Basic Books, New York, 1985. Reprint of the author's lively 1982 *Scientific American* article about the SKEPTICAL INQUIRER, the quest for the truth, and the philosophy of scientific scrutiny of fringe-science. Followed by an eight-page postscript about reaction to the column.

Lewin, Roger. "Evidence for Scientific Creationism?" *Science* 228:837, May 17, 1985. Reports on examination by Eugenie Scott and Henry Cole of the scientific literature of so-called scientific creationism. A computer scan of 1,000 scientific and technical journals found no articles offering empirical or

experimental evidence for creationism. Six prominent creationists had been published in refereed scientific and technical journals during the study period but none of the articles had anything to do with creationism. A survey of 135,000 manuscripts *submitted* to journals found only 18 addressing the scientific underpinnings of creationism and none accepted for publication. Reasons for rejection included "ramblings . . ."; "no coherent arguments"; "high-school theme quality." For more see Scott and Cole, *Quat. Rev. Biol.*, 60:21, 1985.

Lin, James C., et al. "Geophysical Variables and Behavior: XXVII. Magnetic Necklace: Its Therapeutic Effectiveness on Neck and Shoulder Pain: 2. Psychological Assessment." *Psychological Reports*, 56, 639-649, 1985. Study of the efficacy of magnetic necklaces in controlling chronic neck and shoulder pain. A double-blind experiment was performed on 52 subjects with chronic pain and 49 without. Half of each group wore magnetic necklaces; half, nonmagnetic ones. Subjects in the pain group reported lessening of pain no matter whether the necklaces worn were magnetic or not, indicating that the reported improvement is attributable to the placebo effect.

McMillan, Penelope. "Horoscopes: Fans Bask in Sun Signs." *Los Angeles Times*, July 5, 1985, p. 1. Lengthy journalistic report on newspaper horoscope columns. Astrology may be ancient, but this commercial newspaper form of it dates back only to 1930, when the first horoscope column began in the *London Sunday Express*. Lots of lively information here about the people who write horoscopes and many informative comments from the editors who, often reluctantly, publish them. Quotes Howard Simons, curator of the Nieman Foundation at Harvard and former managing editor of the *Washington Post:* "It has no place in a great newspaper. Here we are in an age of science, an age of inquiry, publishing material that is very suspect, at best pseudoscience." But *Post* executive editor Benjamin Bradlee said: "I got tired of Mrs. [Katherine] Graham [chairman of the *Post*'s board] telling me we should have an astrology column, so I got one. I think they're all pretty trashy, but people like them, so what the heck." And the *Los Angeles Times?* "I don't believe in it and, in fact, I never read it," said *Times* editor William F. Thomas of its horoscope column. Why not get rid of it? "I don't think the fuss is worth it."

Mitchell, Henry. "The Realm of the Seer Suckers." *Washington Post*, July 26, 1985, p. D2. Perceptive and witty column about seers and psychics. All "have one thing going for them that no reasonable man does, and that is an audience predisposed to believe him."

Morris, Robert. "What I shall Do With the Koestler Chair." *New Scientist*, Sept. 5, 1985, p. 59. Invited article by Morris describes how he views the Koestler Chair of Parapsychology, which he has now assumed at Edinburgh University, and what he intends to do as its first occupant.

Nield, Ted. "Feathers Fly Over Fossil 'Fraud.' " *New Scientist*, Aug. 1, 1985, pp. 49-50. Report on the controversy over Fred Hoyle's claim that the "missing-link" reptile-bird *Archaeopteryx* is a fake. "Creationists are understandably in high feather about it all. But now, it looks as though they may be left with egg on their face." Several lines of evidence Hoyle put forth have been persuasively discounted by paleontologists.

Patterson, John W. "Lessons of a Controversy." *Science*, 228:1304, June 14, 1985. Review of Bauer's *Beyond Velikovsky*. Patterson calls it "a thoughtful and

penetrating analysis" and recommends it for the lessons that scientist debunkers can learn from it as well as for the way it "contrasts the strategies of scientists with those of pseudoscientists and pseudoscholars."

Porter, E. F., Jr., and John M. McGuire. "Psyched Out: A Six-Year Trip Into the Twilight Zone Is Ending at Washington U." *St. Louis Post-Dispatch*, Aug. 18, 1985, p. 3D. In-depth report on the closing of the McDonnell Laboratory for Psychical Research, "Washington University's first and perhaps last flirtation with the outer fringes of academic scholarship." Notes that many university faculty were embarrassed by the lab. Recounts at length the Project Alpha episode with many quotes from Michael Edwards and Steve Shaw, the magicians who posed as psychics and revealed the lab researchers' gullibility and desire to believe.

Putka, Gary. "A Statue of Mary That Is Said to Move Stirs Fervor in Ireland." *Wall Street Journal*, Aug. 15, 1985, p. 1. Interesting account of the mixture of embarrassment, amusement, skepticism, and boosterism stirred by the claim that a grotto statue of the Virgin Mary moves. The faithful flock to it by the thousands, 14,000 in one night. Psychologists at University College Cork did tests and concluded that the people were moving, not the statue. "Three quarters of the country is laughing heartily," the story quotes an aide to Ireland's prime minister. It notes that many are embarrassed by an Ireland "that believes in divine intervention and 'signs' from heaven . . . in a technocrat's world." "We could probably do without something like this," said a Dublin industrial development official. A contractor asks, "What's happening to people's minds when they see a statue move which doesn't? Irish of any sensitivity are ashamed by this nonsense."

Rotton, James, and I. W. Kelly. "A Scale for Assessing Belief in Lunar Effects: Reliability and Concurrent Validity." *Psychological Reports*, 57, 239-245, 1985. Presents a nine-item scale assessing belief in lunar effects. Study finds that belief in lunar effects is correlated with other measures of belief in paranormal phenomena. "This finding provides support for the idea that lunar beliefs are a subset of a constellation that is usually termed belief in the paranormal."

—*Kendrick Frazier*

From Our Readers

The letters column is a forum for views on matters raised in previous issues. Letters are welcome and are more likely to be published if they are brief and typed double-spaced. Some may have to be edited.

'Hundredth Monkey' myth

I was happy to see Amundson's debunking of the "Hundredth Monkey" myth (Summer 1985). I published a similar study in the July 1983 Association of Humanistic Psychology *Newsletter,* which began a debate that continued in the next two issues and was followed by an article in the British journal *Self and Society* in 1984 and by "Of Myths and Monkeys: A Critical Look at a Theory of Critical Mass" in the January 1985 *Journal of Humanistic Psychology.* Amundson's study confirms my own.

The response to the monkey business has been intense. Some has been quite hostile, accusing me of nitpicking and calling my exhortation to critical thinking among humanistic psychologists "divisive." Many seemed to believe that it really doesn't matter whether a story is mythic truth or scientific truth as long as it advances the cause. The vast majority, however, were grateful for scholarly support for their instinctual distrust of the tale.

Beyond being an exposé of the story as pseudoscientific claptrap, my article was a discussion of the psychological and sociological implications of the fact that the myth itself is an example of an idea that "spread through an entire colony" very rapidly. It might not be true that monkeys can create mass-mind, but it is undeniably true that, with the aid of shady journalism and mass-mediated propaganda, pseudoscientific nonsense can spread through human societies—even across natural barriers—virtually instantaneously.

By debunking whatever is the "myth of the hour," *SI* contributes to the possibility that our mass consciousness may sometime be rational.

Maureen O'Hara, Director
Carl R. Rogers Institute
for Advanced Studies
Lo Jolla, Calif.

Ron Amundson replies:

I was not aware of Dr. O'Hara's work on the Hundredth Monkey, although I had read her earlier piece in the Journal of Humanistic Psychology *on Rupert Sheldrake (Spring 1984). Her work deserves special recognition for two reasons. First, she shows keen insight on the psychological motives for beliefs in "group consciousness" and on the social consequences such beliefs can have. Second, her work is primarily addressed to humanistic psychologists, a group that seems to have an extraordinary fascination with the paranormal. Her clarity of thought and respect for facts is sorely needed in this area.* SI *readers will find her recent* JHP *article especially interesting for its description of the resistance her ideas have found among humanistic psychologists.*

Random walks

In his critique of Daniel Pallant's claims of astrological influences on gold prices (Summer 1985), James Rotton pointed out that the correlations within a random-walk series can introduce spurious correlations between different series.

I was able to demonstrate this by a simple computer experiment.

I began by generating 1,000 independent, identically distributed, standard normal random-numbers and arranging them into ten series of 100 numbers each. The correlation matrix of these ten series was then computed. Not surprisingly, there was no significant correlation between the ten series.

These ten series were then used to generate ten new series of random numbers. The *n*th element of each new series was defined as the sum of the first *n* elements of the corresponding original series. Since the difference between successive elements of each new series was a random number, the new series were random walks. Each random walk was computed from a different series of random numbers, so there was no actual relation between the random walks.

I then computed the correlation matrix of the ten random walks. Of the 45 correlation coefficients computed, all but 4 appeared to be statistically significant, and 12 of them had absolute values greater than 0.70. The simplistic view would be that my ten series were closely related. In fact, the apparent relationship was illusory and due to the fact that the series were random walks. Differencing the series recovers the original ten series and thereby, of course, eliminates the correlations.

This computer experiment was quite easy to perform. I strongly encourage readers who are curious about the behavior of random walks to perform it. While a computer experiment is not a substitute for a mathematical proof, it can be enlightening in a situation where the mathematical result is not intuitive.

Glenn T. McDavid
Chicago, Ill.

Different approaches?

Readers of Gardner's column (Summer 1985) will gather that I have displeased him, but it might not be clear how; the answer is probably to be found in pages 141, 143, and 295 of my book *Beyond Velikovsky*. Gardner's column illustrates some of the debunking tactics I criticize, notably misrepresentation by citing out of context, and comments *ad hominem;* for example, Gardner does not inform your readers that my quoted conclusions about Velikovsky come only after a lengthy setting out of the information and reasoning on which I base those conclusions.

Let me briefly illustrate the differences between Gardner's approach and mine. First, Gardner defends (in his next-to-last paragraph) critics who have not fully done their homework; whereas my book pleads that critics make themselves fully informed, out of plain self-interest if nothing else. Second, Gardner believes (last paragraph) that "there are times when . . . ridicule is unavoidable"; I believe that one always has a choice whether or not to employ ridicule.

Third, the matter of Loch Ness. I chuckled when reading that Gardner at first had thought I was joking in confessing my belief that Nessies are real animals. My purpose in writing that statement had been to produce precisely that sort of response. Immodestly I assume that the statement shocks because hitherto the reader of my book has been led to regard me as a rather hard-headed, even intelligent and logical; and one of the major points that I seek to press is that hard-headed, intelligent, and logical people can reach different conclusions and hold different beliefs, quite rationally, on a host of issues for which definite proof and definite disproof are both lacking—for example, concerning the Loch Ness monster.

I value logic and clarity of thought and appreciate them even when they lead others to beliefs different from those I hold. Gardner, on the other hand, appears to be incredulous when others don't admit that his views are correct, and he regards such differences as appropriate occasions for ridicule. In seeking to push the correctness of his own views, Gardner apparently believes that any polemical or rhetorical devices are justified; in other words,

regarding what he calls pseudoscience, he seems to believe that the end justifies the means.

Henry H. Bauer
Dean, Arts and Sciences
Virginia Polytechnic Inst.
and State University
Blacksburg, Va.

UFOs and the Soviets

James Oberg has provided an excellent summary of the UFO situation in the USSR and demonstrates how Soviet secrecy makes it so difficult for outside investigators (as well as those inside) to find prosaic explanations (*SI*, Summer 1985). But Oberg too modestly fails to inform readers that he played the key role in finding explanations for many of these UFO reports. Only someone with Oberg's expertise in the Soviet space effort and a skeptical interest in UFOs—a rare combination—could have solved many of these cases.

Of particular interest are the UFOs generated by space and missile launches from Plesetsk, a major launch facility in the northwest part of the USSR that had been kept secret from the Soviet public even though its existence has been known openly in the West since 1966. Thanks to Oberg's efforts and his news releases and articles, the USSR finally informed its people of the Plesetsk site and its role in generating UFO reports.

A small but important quibble. UFO reports generated by test firings of the Soviet Fractional-Orbit Bombardment System involved a reentering unarmed reentry vehicle, not a "nuclear warhead." More important, at the time the U.S. government did *not* protest FOBS tests as a violation of the U.S.-Soviet agreement not to station weapons of mass destruction in space. Rather, U.S. strategists and policy-makers viewed FOBS as simply a very long range, low-apogee ballistic missile and a rather "dumb weapon" for any country the size of the USSR or U.S. to deploy. If the fourth stage failed to fire at the right moment, or to provide the desired thrust, the weapon could strike the nation that launched it, or one of its allies.

Philip J. Klass
Washington, D.C.

Middle-school teaching unit

I was thrilled to find Patrick Wilkinson's letter in *SI* (Summer 1985) and am also eager to share classroom information with other middle-school teachers!

About four years ago, kids began coming to class on Tuesday mornings asking such questions as, "Do you believe in phone calls from the dead?" and "Did you see that mouse breathing under water?" Well, I couldn't believe their seriousness (read "gullibility") and set out to discover the root. It was a TV show on Monday evenings that claimed to show the "incredible" (read "unbelievable").

My quest led to a teaching unit entitled "Semi-Science." (A little is; a lot isn't.) UFOs, Nessie, astrology, child psychics, and a host of popular and absurd topics promulgated by pulp newspapers (even local family traditions) are appropriately addressed in class. I consistently, but cautiously, find ways to embed critical thinking and skepticism. (Last year in California a "breatherian" came to town eating only air; and now "you can walk on fire" at $50 workshops.) I am deeply grateful for the *SI* issues in our school library.

This year I initiated research into "Biorhythms." Hundreds of students made accurate, daily assessments of their personal I, E, & P parameters for three weeks before matching data generated by a computer program. It was extremely difficult for most of the kids to avoid the impulse to initially believe they were "wrong" when their feelings weren't what the computer printout said they were supposed to be. But, as you would expect, their actual correlation was extremely low. I found this unit to be an effective method of

relating students' own feelings about themselves to their world, and for teaching techniques—and hazards—of collecting and analyzing personal/psychological data.

My major emphasis at this level is for each person (student, parent, teacher) to recognize his/her own *bias* when analyzing paranormal claims, while resisting the temptation to become another authority just telling them what "truth" to believe.

I, too, would ask *SI* readers/educators to please send me suggestions of topics and possible classroom activities appropriate for 7th-graders. Upon receipt, in return, I can supply sample lessons, hardcopy of some text files and BASIC listings, and/or portions of my program on-disk for an Apple II+ or //e.

Bruce Belknap
Pacific Grove Middle School
Pacific Grove, CA 93950

Effects of paranormal beliefs

I read with great interest Christopher C. Scott's comments (Letters, Spring 1985) on my mildly critical remarks on Dr. Tobacyk's article on the reduction of paranormal beliefs. While I share Scott's concern about undesirable consequences of irrational beliefs, there are a large number of problems with Scott's position that seem to obscure the actual questions at issue.

First, Scott repeats the frequently advanced claim that paranormal beliefs are a threat to civilization in general and to science in particular (that is, to *rationality*). But then he goes on to approvingly refer to Dr. Truzzi's opinion that such beliefs are more dangerous to "religious orthodoxy" (that is, to *irrationality*). Scott cannot have it both ways. What obscures the issue in Scott's argument is the fact that he chooses the phrase "social chaos" to describe the consequences of both of these threats. What he overlooks here is that (*a*) there are different types of "social chaos" involved and (*b*) social peace is not a value per se. So *if* he argues in the name of *rationality*, as he implicitly claims to do, then "social chaos" is a very undesirable consequence in the first case (paranormal beliefs as a threat to science and rationality), but may be the lesser evil in the second one (paranormal beliefs as a threat to "religious orthodoxy" and irrationality).

Second, I cannot possibly agree with what Scott says about the link between Nazism and occultism. There are three different problems with his argument: (*a*) He fails to distinguish properly between the Nazis' respective views on occultism and parapsychology. The Nazis adopted elements of various and extremely diverse occult and mythical systems and beliefs (including tales of lost continents and subterranean cities in the Himalayas, Nordic as well as Indian mythologies, various mysticisms, symbolisms, and cosmologies, etc.) as these fitted their purposes. These elements were used to bolster up the Nazis' *Herrenrasse* mentality and their strange concept of manliness (the latter being at least partly due to homosexual predilections of some of the Nazi leaders). On the other hand, the Nazis were strongly opposed to parapsychology; a number of parapsychologists were persecuted, and the old *Zeitschrift für Parapsychologie* was forbidden soon after the *Machtergreifung* even though its editor, Paul Sünner, had made an embarrassing attempt to adjust himself to the party line by publicly dissociating himself and the journal from former collaborators who, like Hans Driesch and Traugott K. Oesterreich, had been forced out of their academic positions shortly before. (*b*) Scott overlooks occultisms elsewhere, especially the occult boom in England during the same period. (*c*) Scott, finally, seems to be unaware of the fact that the Nazis used occult beliefs for the purposes of propaganda, manipulation, and power politics in the same sense as they used Rilke's or von Hofmannsthal's lyrics, Wagner's music, Nietzsche's philosophy, the money and the technical know-how of the steel (Krupp, Flick, Krauss-Maffey) and chemical (I. G. Farben)

industries, the money and public influence of the Hugenberg Press Trust, and very many other things.

So matters are not as simple as Scott tends to present them. I find myself in full agreement with an observation the late Piet Hein Hoebens, chairman of the Dutch section of CSICOP and a prominent critic of paranormal beliefs, made in private correspondence: "Voltaire's 'people will only cease to commit atrocities when they have ceased to believe in absurdities' must rank as one of the most infelicitous witticisms that have come down to us from the Age of Enlightenment. The very elegance of the phrase suggests that it is the product of an almost mathematical logic, but in fact Voltaire was badly mistaken. Yet the argument continues to make its appearance almost every time the paranormal is discussed. If there is a causal relationship between absurdities and atrocities, the link is far more complicated than is often assumed by skeptics. (These skeptics seem unaware that the creationists employ a very similar type of argument when they hold Darwinist evolution theory responsible for Nazi genocide!)."

Gerd H. Hövelmann
Marburg/Lahn
West Germany

CUFOS display

Michael Dennett's comments on the Center for UFO Studies photographic display (Spring 1985) deserve correction and comment.

Evidence of Mr. Dennett's inattention to fact is prevalent throughout the article. One example: The fact is that Southcenter Mall paid CUFOS $450, not $1,000, for the three-day display. The display is not a big money-maker for CUFOS; it barely covers the expenses of its construction and upgrading.

Other instances of Mr. Dennett's pecular notions of "objectivity" abound: He asserts that "CE-IIIs are widely regarded as obvious hoaxes," when that position actually represents only the claims of the fraternity of UFO debunkers to which Dennett belongs. He claims that CUFOS endorses the "conspiracy theory of UFOs," when instead we have simply presented for public inspection documents of our own government that discuss the UFO phenomenon.

The absurdity of Mr. Dennett's comments is capped by his assertion that CUFOS displays no evidence of skepticism, despite his own report that CUFOS presents information on IFOs and has labeled the Rex Heflin snapshots as likely hoaxes.

It appears that the debunkers wish to stifle the dissemination of any information about the UFO phenomenon unless it meets their rigorous standards of "objectivity." Truly objective individuals may be thankful that the debunkers have not yet succeeded in their quest.

John P. Timmerman
Chairman, CUFOS
Lima, Ohio

Michael R. Dennett responds:

I was certainly surprised by Mr. Timmerman's letter. The figure of $1,000 I used in the article was provided to me by Mr. Timmerman. I was, however, guilty of not verifying this data with the mall office.

In challenging my evaluation of the lack of skepticism in the exhibit, Timmerman provides nothing in detail that I did not mention in my article. The qualification of the Heflin photos is contained in a tiny footnote in a pamphlet that most passersby do not pick up. And this small notice about the Heflin photos was a result, in part, of my previous report on the original exhibit. (See SI, *Spring 1984, pp. 209-210).*

The dramatic full-panel that promotes the book Clear Intent *and other data about the conspiracy theory does endorse the idea. Also, as I pointed out, Dale Goudie, a CUFOS helper at the*

exhibit, was talking at great length in favor of the government-conspiracy theory.

I do agree with Timmerman that skeptics do call for all UFO presentations to meet rigorous standards of truth and objectivity.

SI and religion

David Gerr's lengthy but well-written letter (Summer 1985) covered two issues: the use of humor and "reductio ad absurdum" in discussing paranormal claims and whether or not *SI* should "come to grips with the basic underlying issue of religion itself."

I agree with the first part of Mr. Gerr's letter. Humor and reductio ad absurdum are most effective rhetorical devices when dealing with frauds and lunatics who often do not even deserve serious consideration. In the second part of his letter, Gerr seems to imply that *SI* would benefit by taking a more overt anti-religious stance.

As an atheist activist myself, I think I understand the motivation behind his suggestion, but I must respectfully disagree. I think *SI*'s criticism of religion should remain within the realm of debunking creationism, Virgin Mary miracles, crying statues, the Shroud of Turin, and other such aberrations.

Religion involves several extremely complex philosophical issues, not the least of which is, Does some being or force that one might reasonably call a "god" in fact exist?

The existence of such a force, or the feasibility of rationally justifiable belief in such a force, can be argued pro and con in any number of ways (in my view, much more effectively, con). However, such argument is, and must remain, philosophical: "God" cannot be debunked through the use of the scientific method. The existence of "God" is subject to neither scientific disproof nor verification (barring, of course, a literal theophany).

From a purely pragmatic standpoint, Mr. Gerr's suggestion, if followed, would have a tendency to alienate religious people who are nonetheless interested in the scientific investigation of paranormal claims and beliefs.

Jeffrey V. Governale
Chicago, Ill.

I feel *SI* is on track regarding religion. It would be futile to confront religion on scientific terms. As there is supposed to be separation of church and state, I feel there should be separation of church and science. Where religion ventures into the world of science, as in creationism or scientific "proof" of religious relics, it should be questioned. By the same token, science has no business explaining religion. Science is based on fact; religion, on faith. Anyway most religious tenets do not lend themselves easily to scientific investigation. How does one go about setting up a test of "afterlife"? I think Houdini tried unsuccessfully.

Humans tend to always find something to fall back on, especially when they are having personal problems or are in need of guidance in their overwhelming world. How is science going to console someone who has suffered a personal tragedy? I would rather have established religions around with known values to deal with than have primitive new cults continually springing up from the depths of the human mind.

Finally, many of the world's scientists practice a religion in their private lives, and I'm sure a great many supporters of *SI* do too. Religion is one of the building blocks of our society, like it or not. We just need to keep it in its place.

Russell Straw
Houston, Texas

Natural and supernatural

Aydin Orstan (*SI*, Spring 1985) claimed that once we know all the possible means of communication in nature we shall be able to distinguish between the natural and the supernatural. But he

then declared that the supernatural is "impossible"! How can you distinguish between something that is possible and something that is impossible?

What Orstan probably meant to say was that he does not believe in any means of communication outside of those he described. He is entitled to his view, but the fact that we do not know of other means of communication should not lead to the conclusion that there are no other means. Orstan has confused a hypothesis with evidence.

Steuart Campbell
Edinburgh, Scotland

Aydin Orstan replies:

Mr. Campbell is right in his interpretation that I do not believe in any means of communication other than those unequivocally described in the scientific literature. However, I do not conclude in my article that there are no other ways of information transfer. Such a conclusion would be unscientific, since what we know about nature constantly changes. For example, ESP may be possible, but I will not believe it until reproducible evidence of it has been collected. On the other hand, tabloids are usually crowded with supernatural claims that are possibly taken seriously by many readers even though most of them are simply impossible. Only a scientific understanding of nature will reduce the gullibility of the general public.

(Dr. Örstan is now a visiting fellow, Department of Biochemistry, Mount Sinai School of Medicine, New York.)

The right to believe

I am astonished to find William Gray (Letters, Summer 1985) would deny people the right to believe things known (by *SI* members/readers) to be wrong. He would not be content to point out their errors or to see that the truth was made known; he would revise freedom of belief to something much more limited.

Gray appears to be a professor of philosophy, but I thought the study of that discipline was conducive to recognizing the logical consequences of given courses of action. First, such a policy would require some person or agency to declare what the correct beliefs are, an obvious necessity if people are to avoid believing the wrong things. Second, an agency would have to be established to discover what each person's beliefs actually are, so they can be accepted or rejected. Third, either this or another agency would take appropriate punitive steps against those holding wrong beliefs. This would be an intolerable degree of thought control and interference with personal freedom, as we can see in those parts of the world where it is practiced now.

I like the suggestions of readers that more humor be used in countering fakers. In addition, members themselves might even apply humor to their own attitudes. Remember that these strange ideas will always be around and that to many people the fact that (e.g.) astrological predictions do not come true is irrelevant: They add some interest to lives that are felt to be unbearably dull. That's why it does no good in most cases to show the untruth of predictions, spoon-bending, or ESP. I applaud your efforts and at the same time can see why so many people *need* to turn to the catastrophic predictions, talk about von Däniken, or whatever.

Rinehart S. Potts
Glassboro State College
Glassboro, N.J.

Chicagoland group?

The Northern Illinois/Southern Wisconsin/Northwest Indiana area shares with the rest of the country a striking amount of popular acceptance of pseudo- and anti-scientific ideas. Formerly the home of Dr. Hynek's CUFOS, Chicagoland still hosts the headquarters of the Ancient Astronaut Society, at

least two active creationist organizations, and as recently as last year was the focal point of pilgrimages to a "crying statue" of the Virgin Mary.

The Northern Illinois Committee of Correspondence has had some members active in the broader fight against general pseudoscience, but recent discussions show a clear need for an organization that shares the more comprehensive goals of CSICOP. To that end I would like to find out if significant interest exists in the formation of a local group of skeptics in the Chicago area.

Persons interested in forming such a group are requested to contact me at the following address: Frank Arduini, 21 Monterey Drive, Vernon Hills, IL 60061.

Francis J. Arduini
Vernon Hills, Ill.

Local Organizations

(groups with aims similar to CSICOP's)

Arizona
Tucson Skeptical Society (TUSKS), Ken Morse, 2508 E. 23rd St., Tucson, AZ 85713.

California
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Sacramento Skeptics Society, Terry Sandbek, 7988 California Ave., Fair Oaks, CA 95628.
San Diego Skeptics, R. W. (Ernie) Ernissee and Elié Shneour, Co-chairs, Box 17566, San Diego, CA 92117.
Southern California Skeptics, Al Seckel, Chairperson, P.O. Box 7000-39, Redondo Beach, CA 90277.

Colorado
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Idaho (see Oregon-Idaho)

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Oregon-Idaho
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Dallas Society to Oppose Pseudoscience (D-STOP), James P. Smith, Science Div. of Brookhaven College, Dallas, TX 75234.
Houston Society to Oppose Pseudoscience (H-STOP), Steven D. Schafersman, Chairman, P.O. Box 541314, Houston, TX 77254.

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Committee for Research, Education, and Science Over Nonsense (REASON), Steven Cody, Chairperson, Dept. of Psychology, Marshall University, Huntington, WV 25701.

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The Committee for the Scientific Investigation of Claims of the Paranormal

The Committee for the Scientific Investigation of Claims of the Paranormal attempts to encourage the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and to disseminate factual information about the results of such inquiries to the scientific community and the public. To carry out these objectives the Committee:

- Maintains a network of people interested in critically examining claims of the paranormal.
- Prepares bibliographies of published materials that carefully examine such claims.
- Encourages and commissions research by objective and impartial inquiry in areas where it is needed.
- Convenes conferences and meetings.
- Publishes articles, monographs, and books that examine claims of the paranormal.
- Does not reject claims on a priori grounds, antecedent to inquiry, but rather examines them objectively and carefully.

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